

Railway Age

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Co-operation Selfishly Considered

THERE are all the indications which even the most sceptical could demand that the rank and file of railroad employees are far from supporting the management-baiting policy of some of their organization leaders. Just how many of the solid, substantial citizens who make up the bulk of railroad employees supported their leaders in their unsuccessful excursion into politics last fall cannot be known. Beyond doubt, however, their numbers were—to their ambitious leaders—disappointingly small. But what of the months since the election? Have the employees grown more friendly or less friendly to the railroads? Recently we received a letter, which we are not at liberty to publish in full, from a train service employee, expressing his concern over automobile competition. "This," he said, "is our fight as much as it is the railroads'. If the motor trucks and buses keep on taking business away from the railroads, where will our jobs be? The process may be so slow that we may never notice it. Perhaps no actual business will be taken from the railroads, but only the natural increase in traffic. Even at that, however, although none of us lose our jobs, we shall suffer nevertheless by reason of slower promotion and fewer opportunities for advancement. If our organizations and the railroad managements could agree to stop quarreling about non-essentials for a while we could present a united front to the public and to competition. And that is what we need and need badly at the present time, for our own selfish good." This man sees, and we believe many other railroad employees see, that co-operation between management and men is not a one-sided matter with all the benefit going to the management. One or two of the union leaders have also shown signs of understanding it. But will it ever become the nation-wide policy of all the unions? Here is a need and here is an opportunity. What will those in power do with it?

All Things Considered

A RAILWAY is created to produce transportation. It has no other purpose and all of its activities should be directed to this end. Yet concentration on this objective may be carried to the point that the objective itself may be endangered if not defeated, at least if economy is considered as a corollary. A case in point is the conduct of certain major maintenance-of-way operations. Some of these operations are of such a character that they must take precedence over traffic, as, for instance, when certain types of bridges are renewed. Other operations, such as the relaying of rail or ballasting on heavy traffic multiple tracks, can be done under traffic, but it can be done more expeditiously and economically if traffic is diverted to other tracks during the hours the forces are at work. The practice of so handling traffic that it can be diverted from the track on which work is in progress is growing rapidly of late. There are still many divisions and many

lines, however, on which it is not receiving the consideration to which it is entitled. The first interest of operating officers is and should be the orderly movement of their traffic. For an officer to insist, however, that all other operations must invariably give way to this movement of traffic may be unwise in the extreme and highly detrimental to the interests of his road. The real test of the desirability of diverting traffic from a track in order to expedite the work of maintenance-of-way forces is to determine whether the economy so effected equals or exceeds the cost of the interference of traffic which results under the best arrangement which can be made. It has been the experience of those roads that have given this subject sympathetic consideration that by properly planning the work and doing it at the most suitable time, traffic can be so handled that not only will the cost of the maintenance work be greatly reduced, but the interference to traffic will itself be eliminated more quickly and the cost of handling it increased little, if any. As a result, the saving effected in the maintenance operations is a net saving which accrues to the road for which both departments are working. This subject is worthy of special consideration at the present time when maintenance-of-way forces are engaging actively in the heavier activities of their season's program.

A Way to Reduce Expenses

IN an address before the Traffic Club of Minneapolis, Minn., on April 23, C. H. Markham, president of the Illinois Central, stated that while the investment in that road amounted to \$303,000,000 in 1910 it had been increased to \$573,000,000 at the end of 1924. In other words, approximately 90 per cent as much money has been spent in the development of this property in the last 14 years as in its entire history prior to that time. During this same period the ton-miles of traffic handled increased 87 per cent, while the freight train miles increased only 3 per cent. Largely as a result of the improvements that have been made in the property by the expenditure of these vast sums, the freight traffic of 1924 was handled with 19,000,000 less freight train miles than would have been required if the road had continued to operate on the same basis as in 1910. The increased investment of \$270,000,000 produced a saving in the cost of freight train operation of approximately \$20,000,000 a year, whereas the increase in fixed charges was only approximately \$7,105,000. As a result economies were effected aggregating \$12,895,000 which enabled the road to meet increased taxes of \$9,700,000 and numerous other added expenses. What the Illinois Central is doing is a striking example of the development which the railways as a whole are facing in the future. During the period in question, relatively little addition has been made to the mileage of its lines. Rather this vast sum has been spent for the improvement of the lines already owned to enable them to be operated more efficiently and at lower cost. If the rail-

ways are to meet the demands which will be made upon them for dependable, economical transportation in the future, they must continue to spend vast sums for improvements of this character. This requires that railway managements shall be constantly on the alert for opportunities to effect economies, large and small. They must also have the courage to undertake these improvements after due investigation has demonstrated their feasibility. As Mr. Markham pointed out in his Minneapolis address, however, the Illinois Central has been able to make these improvements only because it had the credit necessary to enable it to raise capital at reasonable rates. If the public desires economical as well as efficient transportation, it is incumbent upon it to see that the roads are permitted to earn enough to raise and maintain their credit at such a level that they can finance these improvements as their economy is demonstrated. It is in this way and only in this way that rates can be reduced to the minimum practicable level.

Freight Business Increases

THE prediction made in an editorial in the *Railway Age* for April 18 that there would not be, in the spring and summer of this year, a decline of railroad freight business such as occurred last year, has thus far been quite completely vindicated. We recalled in that editorial that the decline in the second and third quarters of last year was almost wholly in coal business; estimated that storage supplies of coal were about twenty-five million tons less than a year before, and anticipated that in consequence coal shipments and total freight business would not long continue to show the decline they did February and March of this year.

The latest car loading figures available at that time were those for the week ended March 28. It is significant and gratifying that in every week since then, for which reports are available, coal shipments have increased and total freight business has been larger than in the corresponding week of last year. In the week ended May 2 coal shipments were 149,218 carloads. This was 22,000 carloads more than in the corresponding week of 1924, and also more than in any week of 1924 from that ended March 29 to that ended August 23. The average loading of coal per car is so large that a substantial decline or increase in the number of carloads of it shipped has a great effect upon the total ton mileage and earnings of the railways. For example, the total number of cars loaded with all freight this year in March was greater than last year, and yet, owing to the decline in coal shipments total ton mileage and earnings were less than last year. Because of the increase in loadings of coal in April traffic and earnings in that month undoubtedly will be found, when the reports for that month are made, to have been larger than last year.

However, shipments of coal are not the only kind that recently have been increasing. Total car loadings in the week ended May 2 were 981,711, the largest reported in the present year and larger than for any week of 1924 until that ended August 23 when last year's big revival of traffic had begun. Shipments of forest products throughout the present year have been exceeding all previous records. Shipments of ore recently have been rapidly increasing and in the week ended May 2 were 59,146 carloads, which exceed all records for so early in the year. Shipments of miscellaneous carload freight were larger in every week of April than in the corresponding week of any previous year, as was also true of shipments of less than carload merchandise. Average car loadings

per week in the six weeks ended May 2 were 52,361 greater, or 6 per cent more, than in the corresponding weeks of last year.

All these facts indicate that the decline of business in February and March was only temporary, and, together with general conditions, encourage the hope that at least during the second and third quarters of this year the railroads will have a better business than last year. However, how good their business will be during the second half of the year will, of course, depend largely upon the crops.

Why Purchases Should Be Stabilized

APPARENTLY few railway officers ever have given much consideration to the extent to which the purchases made by the railways as a whole fluctuate year by year or the effects thereby produced. This is not unnatural. Most railway officers are officers of individual lines and necessarily their minds are occupied chiefly by the needs and problems of their own roads. There are, however, many important problems that concern the railways as a whole and even the industry of the country as a whole. One of these is the problem of stabilizing railway purchases, the solution of which would be very beneficial to the railways themselves and the entire industry of the country.

To indicate the magnitude of the fluctuations in the railways' acquisitions and retirements of equipment, and the consequent fluctuations of the increase in the tractive power of their locomotives and carrying capacity of their cars, we publish herewith three tables. Table I shows that in the 18½ years ended December 31, 1924, the average number of locomotives installed annually was 2,500, freight cars, 115,475 and passenger cars, 2,290. These annual averages for the entire period have each been taken as 100 per cent; and the rest of the figures in

TABLE I.—LOCOMOTIVES, FREIGHT AND PASSENGER CARS INSTALLED—CLASS I ROADS

	Locomotives	Freight cars	Passenger cars
Average number installed from June 30, 1906, to Dec. 31, 1924.....	2,500	115,475	2,290
Average June 30, 1906 to Dec. 31, 1924, equals 100	(100)	(100)	(100)
Year ended June 30, 1907.....	151	167	87
Year ended June 30, 1908.....	129	149	95
Year ended June 30, 1909.....	62	59	78
Year ended June 30, 1910.....	123	117	153
Year ended June 30, 1911.....	148	109	186
Year ended June 30, 1912.....	114	85	134
Year ended June 30, 1913.....	175	140	123
Year ended June 30, 1914.....	130	131	159
Year ended June 30, 1915.....	45	74	116
Year ended June 30, 1916.....	59	76	55
Year ended Dec. 31, 1917.....	86	102	111
Year ended Dec. 31, 1918.....	112	57	79
Year ended Dec. 31, 1919.....	82	66	19
Year ended Dec. 31, 1920.....	41	31	27
Year ended Dec. 31, 1921.....	53	55	73
Year ended Dec. 31, 1922.....	49	91	58
Year ended Dec. 31, 1923.....	161	158	119
Year ended Dec. 31, 1924.....	90	128	123

the table show what percentages the numbers of locomotives and cars acquired in each year were of the average number installed annually. Likewise, Table II shows that during this period the average number of locomotives retired annually was 1,620; freight cars, 83,848; and passenger cars, 1,518. These average figures being taken as 100 per cent, the rest of the table shows what percentages the numbers of locomotives, freight cars and passenger cars retired in each year were of the average numbers retired annually. Finally, Table III shows that the average annual increase in the aggregate tractive power of loco-

motives was 77,859,998 pounds, and the average annual increase in the aggregate capacity of freight cars 2,561,270 tons. These average annual increases are taken as 100 per cent, and other figures in the table show what percentage the increase in each year was of the average annual increase for the period.

The statistics in these tables show that there always have been extremely wide variations in the amount of equipment installed and retired annually, and that this has resulted in correspondingly wide fluctuations in the annual increase—or decrease—in the total tractive power of locomotives and carrying capacity of cars. The number of

ing the return of the railways to private operation in 1920 and the depression that speedily ensued the increase in the tractive power of locomotives and carrying capacity of cars declined to the lowest level ever reached. This was followed in 1923 by a large increase in the amount of equipment installed in service and by the most extensive retirements ever known.

The vast fluctuations in purchases shown by these figures cause, of course, correspondingly large fluctuations in the business of railway equipment and supply manufacturers. They result in making it necessary for these manufacturers to maintain a much larger capacity for production than would be necessary if orders were given to them more uniformly year by year, and in consequence make their average production costs higher than they otherwise would be. They result in large fluctuations in the prices of equipment and supplies, and in the railways paying higher average prices than otherwise would be necessary, because the fact that they all buy at the same time necessarily makes prices high at the time that they buy.

It may be said that a railway manager would find it difficult to justify to his board of directors large purchases of locomotives and cars at a time when business was poor and his road had a large surplus of equipment. This may be true, but if it is it shows that boards of directors greatly need education. A period of poor business has always been speedily followed in this country by a period of good business. Likewise a period of good business always has been followed by a period of poor business. *In consequence in the past the result of postponing purchases until business has become good has been to cause the roads to be caught repeatedly when business was good with inadequate equipment and to be caught when business was poor with large surpluses of equipment.* The

TABLE II.—LOCOMOTIVES, FREIGHT AND PASSENGER CARS RETIRED, CLASS I ROADS

	Locomotives	Freight cars	Passenger cars
Average number annually retired from June 30, 1906, to Dec. 31, 1924.....	1,620	93,848	1,518
Annual average June 30, 1906, to Dec. 31, 1924, equals 100.....	(100)	(100)	(100)
Year ended June 30, 1907.....	2	2	3
Year ended June 30, 1908.....	70	85	107
Year ended June 30, 1909.....	82	99	105
Year ended June 30, 1910.....	90	90	126
Year ended June 30, 1911.....	91	81	112
Year ended June 30, 1912.....	115	83	91
Year ended June 30, 1913.....	144	115	121
Year ended June 30, 1914.....	115	116	122
Year ended June 30, 1915.....	93	108	91
Year ended June 30, 1916.....	159	131	142
Year ended Dec. 31, 1917.....	88	74	110
Year ended Dec. 31, 1918.....	60	67	69
Year ended Dec. 31, 1919.....	62	52	44
Year ended Dec. 31, 1920.....	77	89	58
Year ended Dec. 31, 1921.....	70	83	61
Year ended Dec. 31, 1922.....	104	151	85
Year ended Dec. 31, 1923.....	227	221	179
Year ended Dec. 31, 1924.....	133	139	157

locomotives installed has varied from 41 per cent of the annual average in 1920 to 175 per cent in 1913. The number of freight cars installed has varied from 31 per cent in 1920 to 167 per cent in 1907. It was 158 per cent in 1923. The retirements of locomotives have varied from 2 per cent of the annual average in 1907 to 227 per cent in 1923 and of freight cars from 2 per cent in 1907 to 221 per cent in 1923. In consequence of these fluctuations in installations and retirements the increase in the aggregate tractive power of locomotives has varied from as little as 16 per cent of the annual average increase in 1922 to 181 per cent in 1913 and 192 per cent in 1907. Likewise, the changes in total capacity of freight cars have varied from an actual reduction in 1920 and 1921 to an increase of 318 per cent of the annual average in 1907.

Only a glance at the statistics in these tables is necessary to ascertain that fluctuations in traffic have been the principal reason for these great fluctuations in the installation and retirement of equipment. Generally speaking equipment is installed in service the year after it is ordered. Following the panic of 1907 there was a large decline of traffic in 1908, and the orders placed for equipment in that year were so small that in 1909 the increase in the aggregate tractive power of locomotives was only 36 per cent of the average for the period and the increase in the aggregate capacity of cars only 14 per cent. On the other hand, the year ended June 30, 1913, was the last of four years of large traffic and earnings, and in that year the increase in the tractive power of locomotives was 181 per cent and in the capacity of freight cars 182 per cent of the annual average. The two years ended June 30, 1915, were a period of extremely poor traffic and earnings, and in the year ended June 30, 1916, the increase in the tractive power of locomotives was only 26 per cent, and the increase in the carrying capacity of freight cars only 29 per cent, of the averages for the period. When business became better during the war years there was an increase in the number of locomotives and cars installed and a reduction in the number retired. Follow-

TABLE III.—INCREASE IN AGGREGATE TRACTIVE POWER OF LOCOMOTIVES AND CAPACITY OF FREIGHT CARS—CLASS I ROADS

	Increase in total tractive power of locomotives	Lb.	Increase in total capacity of freight cars	Tons
Average annual increase June 30, 1906, to Dec. 31, 1924.....	77,859,998	...	2,561,270	...
Average annual increase June 30, 1906, to Dec. 31, 1924 equals 100	(100)	...	(100)	...
	(Inc. or Dec.)		(Inc. or Dec.)	
Year ended June 30, 1907.....	149,541,076	192	8,133,796	318
Year ended June 30, 1908.....	92,730,460	119	6,002,735	234
Year ended June 30, 1909.....	27,995,131	36	347,914	14
Year ended June 30, 1910.....	88,754,739	114	3,465,084	135
Year ended June 30, 1911.....	129,702,375	167	4,381,629	171
Year ended June 30, 1912.....	76,395,954	98	1,858,707	73
Year ended June 30, 1913.....	141,297,339	181	4,661,014	182
Year ended June 30, 1914.....	92,940,046	119	3,842,892	150
Year ended June 30, 1915.....	17,105,443	22	1,085,611	42
Year ended June 30, 1916.....	19,987,441	26	731,599	29
Year ended Dec. 31, 1917.....	87,747,440	113	3,572,560	139
Year ended Dec. 31, 1918.....	135,533,080	174	1,006,341	39
Year ended Dec. 31, 1919.....	91,197,533	117	1,932,220	75
Year ended Dec. 31, 1920.....	38,457,977	49	(D) 417,471	(D) 16
Year ended Dec. 31, 1921.....	45,945,240	59	(D) 182,503	(D) 7
Year ended Dec. 31, 1922.....	12,361,368	16	305,342	12
Year ended Dec. 31, 1923.....	113,844,212	146	2,635,046	103
Year ended Dec. 31, 1924*.....	39,600,269	51	2,537,263	99

*Aggregate tractive power and car capacity for 1924 estimated.

amount of surplus equipment on which fixed charges have had to be paid undoubtedly has been greatly increased by the general practice of buying only when business has been good. Furthermore, a road that buys when the builders have only small orders on their books can usually get lower prices, and these lower prices will reduce the amount of fixed charges that will have to be paid annually on the equipment throughout its entire life. Since the average life of a locomotive is about 35 years and the average life of a freight car about 27 years much more would be saved in fixed charges in the long run by buying when prices are relatively low, than by postponing

buying until the equipment is actually needed and prices have become relatively high. It may be said that when business is poor it requires a high degree of foresight to determine when it will become good again and when purchases should be made. It requires just as much foresight, however, to decide whether to buy when business is good as when it is poor, and *statistics of equipment installations and traffic show conclusively that in the past twenty years installations usually have reached their maximum just when traffic was beginning to decline and have reached their minimum just when traffic was beginning to increase.*

Necessarily since the railways are not all under one management they buy in accordance with the views of the management of each as to its traffic needs and financial situation. The larger fluctuations in traffic and earnings are due to changes in general business conditions and therefore usually are relatively about the same on all roads from year to year. On the other hand, the financial strength and credit of different roads vary widely. Why, therefore, should they all follow virtually the same purchasing policy from year to year, practically all postponing purchases when business is poor and practically all rushing into the market at the same time when traffic and earnings become relatively large? There are numerous roads which are strong enough to finance the acquisition of equipment on favorable terms when business is poor. It would appear from past experience they have everything to gain and nothing to lose by doing so, and the result would be greatly to reduce fluctuations in total purchases, to enable the manufacturers to produce at lower costs and to enable the railways, both rich and poor, to buy at lower average prices. Purchases made by the railways are so large that greater stabilization of them would have a steadying influence on the entire business of the country, and the railways would derive an appreciable benefit from this through the indirect stabilization of their freight business.

Varied Phases of the Collision Problem

THE running test of air brakes, which is made after a train starts from a station or when it is about to descend a steep grade, ought to give to the engineman positive information that the brake system is in good operating condition throughout the train. This is the main conclusion of the government inspector in his report on the Manhattan Transfer collision of February 24, noticed in another column. This collision, due to a closed angle cock ahead of the first car, is held to have occurred in spite of a running test which was made at about 18 miles an hour, the braking of the locomotive alone having apparently reduced the speed sufficiently to satisfy the engineman.

The only convenient way to carry out this recommendation would be for a trainman, on the rear car, to sound the air-whistle on the locomotive, after feeling the brakes go on. How many blasts should he sound? Two blasts, three blasts, four blasts are used for other purposes; and five blasts would require about eight seconds. Must the air-whistle code be changed?

The report also calls for a locomotive whistle "of adequate volume and unmistakable tone; or some other reliable means of communication" so that trainmen would never fail to get a stop signal given by the engineman. In this instance the whistle was sounded, but was not heard. This feature of the case serves as a reminder that

the multiplication of safeguards sometimes complicates more than it simplifies. Collisions will occur from neglect to use the conductor's valve, in spite of the loudest whistle that could be made; while for every loud whistle that prevented a collision there would be ten thousand loud whistles making trouble for superintendents everywhere.

There are theoretical safeguards which, probably, we shall go on to the end of time *hoping* to make useful, but which never can be relied upon; such for example as the possibility that a motorman's helper could prevent a collision by quickly going back to the first car and opening the conductor's valve, as might have been done at Manhattan Transfer. Another is that conductors ought always to check, in season, the engineman who carelessly runs past a meeting point, on single track; but failures continue, and it is clear that to do anything effective some other line of attack will have to be adopted. Dispatchers sometimes prevent collisions by calculating, beforehand, that a conductor or an engineman will forget, and forestalling his error; but there is no system by which that kind of dispatcher-wisdom can be cultivated, and the logical means of preventing those collisions lies in another direction.

The lazy or forgetful flagman, who ought to prevent rear collisions but does not, has often enforced the truth that the doubling of safeguards does not make a hundred per cent increase in safety; but we are still depending on him. He is not so numerous or so dangerous as he used to be; but he is still with us. Very often some new illustration of the weakness of the flagging system compels us to consider something better, but we still pin our faith on duplicate or overlapping safeguards.

The ideal, in all of the operations which we try to cover by train rules and block signals, would be to have every act or operation performed in exactly the same way in an emergency as it would be performed in the ordinary routine, and to require nothing additional to be done on the spur of the moment. The great virtue of the block system, as a preventive of collisions, is that it is preventing them all the time, not alone on special occasions. Innumerable errors of enginemen have been explained not by the lack of knowledge, *per se*, but simply by lack of the habit of using knowledge. Only as we can approach such a high ideal can we expect to free ourselves from the various specters that the collision records every now and then bring up.

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

Proceedings of the 36th Annual Convention of the National Association of Railroad and Utilities Commissioners, Phoenix, Ariz., 1924. Also contains proceedings of National Grade Crossing Conference, Chicago, 1924. 675 p. Published by the Association, New York City, \$5.

Uniform Through Export Bill of Lading, by W. Rodney Long. U. S. Dept. of Commerce Trade Information Bulletin No. 335. Advantages and disadvantages of bill prescribed by Interstate Commerce Commission. 43 p. Pub. by Govt. Print. Off., Washington, D. C.

Ventilation of Railroad Tunnels. A List of References compiled by Library, Bureau of Railway Economics, Washington, D. C. 25 p. Apply.

Periodical Articles

Electric Railway Results in 1924, by Edmund J. Murphy. Tabulated returns from 370 companies. Aera, May, 1925, p. 1611-1626.

Energy Supply for Chilean State Railway Electrification, by David C. Hershberger. Maps and Illus. Aera, May, 1925, p. 1670-1677.

Giant Engines Point to New Era in Transportation, by Hawthorne Daniel. Popular article on steam, electric and oil-burning locomotives. Popular Science Monthly, May, 1925, p. 23-25, 129.

The Motor Vehicle as a Transportation Facility, by R. A. C. Henry. Author is director, Bur. of Economics, C. N. R. Engineering Journal, May, 1925, p. 195-200.

Spending \$1.75 To Take In \$1, by Robert S. Henry. Problems of short and branch-line operation. Nation's Business, May, 1925, p. 47-49.

The Stockholder as a "Good-Will" Asset, by Franklin Snow. To railroads and other industries. Annalist, May 11, 1925, p. 648.

What This Industry Means to the Carriers. Sand, gravel, and stone transported in 1923. National Sand and Gravel Bulletin, May 15, 1925, p. 5-6.

When Pullmans Went A-Begging, by Robert Bendicon. Illustrated article on early passenger train facilities. World Traveller, May, 1925, p. 20-41, 48-49.

Now for the Flying Flivver. Inauguration of air services of Mr. Ford's transportation systems. Literary Digest, Apr. 25, 1925, p. 12-13.

Open Tank Creosoting Plants for Treating Chestnut Poles, by T. C. Smith. Illustrated description of tanks, rail equipment and connections, etc. Bell System Technical Journal, April, 1925, p. 235-264.

Preventing Business Depressions and Booms, by Carl Snyder. Use of statistical and other data on railroads and other business factors in business management. Harper's Magazine, May, 1925, p. 683-689.

The Transmission of Pictures Over Telephone Lines, by H. E. Ives [and others] Illustrated. Bell System Technical Journal, April, 1925, p. 186-214.

New Books

American Red Cross First Aid Book, Abridged; Industrial Edition, by Charles Lynch and M. J. Shield. 262 pages. 5½ in. x 7¾ in. Paper covers. Published by P. Blackiston's Son & Company, Philadelphia, Pa. Sixty cents a copy.

The third edition of this comprehensive and thorough standard work has just been issued. Its authors are officers in the United States Army and their experience as physicians in this field and as teachers and authors, makes this an almost perfect book. Its arrangement is so simple and logical that the reader finds his questions answered as soon as he asks them, and good illustrations are plentiful. The first two chapters (28 pages) cover a general treatise, with questions for catechising; and the next seven deal separately with important details of the subject—Injuries, Bleeding, Heat and Cold, Suffocation, Poisoning, etc. Chapter X, 32 pages, treats of industrial accidents, the paragraphs on railroad work including much information on prevention, and on general education in safe habits. Elaborate rules are given for conducting a first-aid contest. It is regrettable to observe (page 256) the use of parentheses where none are needed, and where they destroy the sense. The book has a very full and lucid index.

Letters to the Editor

[The RAILWAY AGE welcomes letters from its readers and especially those containing constructive suggestions for improvements in the railway field. Short letters—about 250 words—are particularly appreciated. The editors do not hold themselves responsible for facts or opinions expressed.]

Load College Men to Capacity

NEW YORK.

TO THE EDITOR:

The impression I received after attending the April meeting of the New York Railway Club (see *Railway Age*, May 2, 1925, page 1083) was that for all Prof. Daniels' urging railroads to cooperate with the colleges in interesting graduates to seek railroad positions, officials of the old school still believe college men want to start at the top. Hearing this, I wondered how well these men understand the college man. Wanting to start at the top is the exception, I venture to say, not the rule. Graduates do not start at the top in other industries, yet they stick. Why, then, does this condition apparently not exist on the railroads?

Many industries take college men and put them through a course of training, after which they are given positions from which they may advance on merit. Some railroads, like the Pennsylvania Railroad, have corresponding courses of training in the several departments. But very often, on completion of such a course, the man must take his place on the seniority roster for the given position, and wait. Meanwhile he is obliged to apply himself to routine work which he knows could be done as well by a less capable man at lower expense. At the same time he knows he is not being worked to his full capacity.

In other words, the college man should not be employed unless there is a definite requirement for initiative. Consider the man finishing a technical school or university. He has been taught to think quickly, accurately, individually; he has been required to accomplish various difficult assignments in a certain limited time. With all, he has attained athletic or social prestige, perhaps both, on the campus. Now he is conscious of entering a new era of life and of the obligations concurrent with his advancement.

He is naturally anxious to show by tangible results that the time and money spent in the past four years have not been wasted.

He enters the railroad game. For several months, the newness of the work fills his mind. It is easier than it was in school; the hours are shorter, and his enthusiasm is high.

But unless he is acting as an apprentice, the end of the first year sees the edge taken off his enthusiasm. He realizes he is more than a match for his neighbor, despite his seniority. After another year with no advancement, he becomes restless. On asking what the chances are for advancement, explaining he does not consider he is working to capacity at present, the learns nothing is in sight more than waiting his turn. His superior, meanwhile, of the old school, assumes here is another college man who wants to start at the top. The man in question now either leaves the railroad and makes good in some other field, or he may acquiesce and wait his turn, becoming in time a well-done company man with few original ideas and the overpowering conviction that "it

never has been done and can't be done now." There are, of course, exceptions, fortunately.

The man starting as an apprentice has an advantage over the previous example. He has some definite position in view after his apprenticeship, which keeps alive his interest. After attaining it, he knows his future depends on the results he can produce. Railroads having apprenticeship courses, however, can afford close attention to them. It must be remembered that these college men can be driven harder than the others, because they are used to it. Give them plenty of work as apprentices, hard work. Test them not by how well they fit into the machine only, but also by their capacity for getting things done. Try them on the "can't be done" problems. And before deciding that they want to start at the top, compare them to an engine. You don't sent it out short of tonnage. Why hold the capable ambitious man to a light tonnage job? If you can't load him to capacity, you don't want the college man.

TRANSPORTATION APPRENTICE.

The Kind of College Men the Railroads Need

RICHMOND, Va.

TO THE EDITOR:

I have been discussed in the *Railway Age* from time to time the subject of "College Men on the Railroads." There have been assertions that the railroads did not want college men, and other assertions that the college men did not want to work for the railroads.

What are the facts regarding the opportunities of college men on the railroads?

There are just as good opportunities for college men on the railroads as there are for non-college men. It seems to me that the question largely depends on whether the college man is willing to undergo the training which the railroad man must necessarily get. It should be borne in mind that the things a man learns in college are not as valuable to him in the first few years of his railroad work as they are at a later time, unless, as is usually the case, he goes into some branch of the service where the opportunities are not as great as they are in some other departments.

It has been my observation that most college men on graduation go into the technical branches, such as law or the engineering branches of the construction, maintenance, mechanical or testing departments. All of these branches are comparatively small in size, and most of the men in them are college men; therefore, a college man beginning in such a way finds himself in competition with men of his own type and preparation, and the competition is keen and advancement necessarily slow, for three reasons:

1. There are not as many important positions in any of those departments, speaking by comparison with some of the other larger departments.
2. The rates of pay in the minor positions are fairly good, and the tendency is for men to hold on to the jobs, which, of course, means slow advancement.
3. The men do not gain the broad knowledge and experience necessary for advancement in other departments more closely concerned with operation.

College men as a rule do not enter the transportation department. It is in that department, however, that there is more real opportunity for advancement than in any other. The minor positions start at low salaries, where the work is hard and the hours long and the competition keen.

In the transportation department where thousands of men are employed, the entire proposition is vastly different from the technical departments, where the number of employees is small. If the college trained man is willing to undergo the training in the transportation department of a railroad, he has a marked advantage after the first few years, as his training, which he has received in college, will then be of value to him. He will also find that the breadth of view which his education has developed will be valuable when he reaches a position where he directs the activities of men.

If a college man really desires to learn the railroad business, with a view to ultimate success, it would seem logical for him to seek a position in that branch of the service where the opportunities of ultimate success are the greatest. Railroad officials come from all branches of the service, however, and from all kinds and conditions of men, having all degrees of preliminary education, from practically no school work to a university training. And it should be remembered that for every college graduate entering railroad service there are several hundred, perhaps thousands, of non-college graduates entering it, with whom he has to compete, many of them possessed of as great inherent ability, the same ambition to get ahead and, possibly greater industriousness.

I have talked to many young college men about going into railroad service. I believe that they think that the pay for the entrance grades on the railroad is too small, and that it takes too long to get ahead; that the opportunities are not as great as in other industries, and that the work is very hard.

It is certain that a college man has to compete on a railroad, especially in the transportation department, with non-college men, many of whom are eager to advance, are willing to work hard, who feel proud of their jobs, and have determined to make it their life work. These men are able to supplement their early education with study in correspondence schools and night schools, and by reading technical papers and learning the things which they need to know about as fast as they need to use them. This educational work is directed and fostered by the railroad company itself. The college man finds that in comparison with such men he must be able to show a great deal more than a university diploma, in order to compete on favorable terms.

One feature which I believe has some bearing on the college man's distaste for railroad work is that in a great many cases the training ground for officers requires residence in obscure and remote districts, away from the social life to which he is accustomed.

I believe I am safe in saying that the railroads want college men because of their general education. They also want men who are willing to work hard, who have made up their minds to stick to the business and make it their life work; men who are willing to undertake the preliminary training that goes with the job; men who are willing to win their advancement on account of their own superiority.

It is certain that in the railroad business today men will not be advanced because they are college men or non-college men. No officer of good judgment can afford to advance any man unless he can perform the duties of the position to which he is advanced. It simply is not done. I do not believe that I can remember a case in the many years I have been railroading where a promotion was made except on merit, and not with regard to whether a man was a friend, a relative, a college man, a non-college man, or a member of the same lodge. The college man and the non-college man will gain promotion through ability and not otherwise.

R. D. BEGIEN.

Vice-President in Charge of Operation, Chesapeake & Ohio.

Three-Cylinder Locomotives on American Railroads



Road service tests show ability to handle increased tonnage, ease in starting heavy trains and economy in fuel consumption

Philadelphia & Reading engines, the complicated and inaccessible mechanisms tended to obscure the advantages of three-cylinder locomotives in the opinion of American designers.

Because of these mechanical difficulties, the three-cylinder locomotive of the early type did not become an important factor in the development of railway motive power and very little was said about it in this country until the latter part of 1922 when the American Locomotive Company converted a two-cylinder 4-8-2 type locomotive to a three-cylinder engine for the New York Central.* Several radical departures in design were noticeable on this locomotive in comparison with the earlier types previously mentioned, probably the most important of which was the development of a valve motion along the lines of the Gresley gear used in England. This gear made it possible to control the distribution of steam to the center cylinder with an outside motion and without the necessity of adding greatly to the complication

THREE-CYLINDER locomotives are not a new development either in this country or in Europe. The history of this type of motive power in the United States dates back at least to 1848-49, at which time two 4-4-0 type locomotives were converted to the three-cylinder type for use on the Philadelphia, Wilmington & Baltimore, which is now a part of the Pennsylvania System. From that time up to the year 1894, twelve three-cylinder locomotives of various types were constructed in this country. The next marked advance took place in 1909, at which time the Philadelphia & Reading built a three cylinder Atlantic type locomotive followed by two Atlantic and one 10-wheel type built during 1911 and 1912.

The early history of the three-cylinder locomotive is not especially pertinent to its present-day stage of development except in-so-far as the difficulties in design, construction and operation may have served as valuable examples on which to base the design of the present type. The common features of the construction of the locomotive as built by the Philadelphia & Reading in the years 1909 to 1912 are the locations of the three cylinders, equal setting of the crank pins at 120-deg. intervals, but on separate axles, the inside cylinder being connected to the leading axle and the outside cylinders to the second pair of wheels, and the employment of Walschaert gear for the external motion with Joy's gear for the inside valve. Independent valve gear characterized the early locomotives of this type and, inasmuch as the valve gear was placed between the locomotive frames, except in the case of the



D. L. & W. Three-Cylinder Mountain Type Locomotive Ready to Leave the Hoboken, N. J., Terminal

of the valve gear parts. The original converted three-cylinder locomotive for the New York Central was modernized by the application of the feedwater heater, booster and a mechanical stoker and, after having been in service for several months, demonstrated the possibilities of this type of locomotive in handling heavier trains.

The second three-cylinder locomotive was a 4-8-2 type built by the American Locomotive Company and delivered to the Lehigh Valley in October, 1923. The application of numerous fuel economizing devices to the first three-cylinder locomotive built for the New York Central made it difficult definitely to establish the economy due to the

The illustration at the top of this column shows the L. & N. three-cylinder Pacific.

*This locomotive was described in detail on page 821 of the November 3, 1923, issue of the *Railway Age*.

three-cylinder principle. Therefore, in the development of the new locomotive for the Lehigh Valley, an effort was made to design the unit as plain as possible. The general dimensions of this locomotive, No. 5000, do not differ materially from those of the first locomotive, New York Central No. 2568, the main difference being the provision of a larger boiler and grate area and a combustion chamber. On the Lehigh Valley locomotive the inside and outside cylinders are connected to different axles, while on the New York Central locomotive they drive on the same axle.

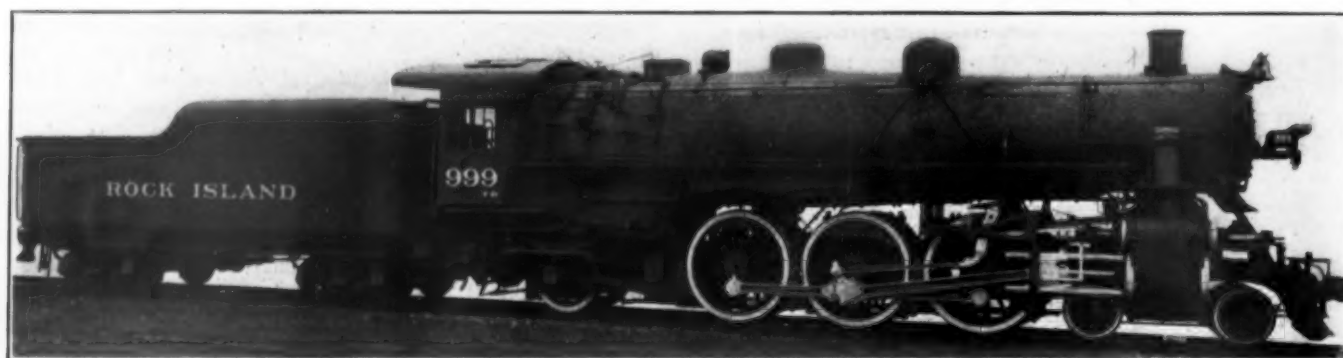
Within a period of two or three months after the Lehigh Valley locomotive was placed in service, a number of test runs were made which showed that this type possessed possibilities as to fuel economy, ability to make up time with heavy trains, freedom from lurching and

more are under construction, making a total of at least 52 which will be in service before many months elapse. Two single orders, namely those for the New York, New Haven & Hartford and for the Southern Pacific, were for 10 and 16 locomotives, respectively.

Lehigh Valley

Probably the most complete information on the performance of three-cylinder locomotives is that in connection with the operation of Lehigh Valley Locomotive No. 5000 which has been in service since October, 1923. The results obtained on that road with this first locomotive were so satisfactory that five more of the same type were built and placed in service in January, 1925.

When Locomotive No. 5000 was first placed in service, several test runs were made in freight service on the



This Locomotive Has Been in Service on the Chicago, Rock Island & Pacific for Several Months

vibration at high speeds and ease in starting, it being possible to get a heavy train under-way with a noticeable absence of jerking.

Table I gives a tabulation of the important characteristics of the three-cylinder locomotives so far built by the American Locomotive Company. It is a significant fact that from April, 1922, to January, 1924, only three locomotives of this type were built for American railroads. The suggestion might be ventured that motive power officers hesitated to accept a type of locomotive with which

Buffalo division which were described in detail in the *Railway Age* for March 15, 1924, page 755. After these tests were completed. Locomotive No. 5000 was regularly assigned to milk-train service between Sayre, Pa., and Lehighton, a distance of 145 miles.

In this district heavy grades are encountered between Coxton, Pa., and Mountain Top, eastbound, and between Lehighton and Mountain Top, westbound. From Coxton, eastbound, trains are moved up the mountain over two routes: one known as the back-track via Avoca and the

TABLE I—PRINCIPAL CHARACTERISTICS OF ALL THREE-CYLINDER LOCOMOTIVES BUILT TO DATE

Road	Class	Cylinders size, in.	Boiler press., lbs.	Diameter drivers, in.	Weight on drivers, lb.	Total weight, lb.	Tractive force, lb.	Factor of adhesion
N. Y., N. H. & H.	0-8-0	22 by 28	200	57	245,500	245,500	60,000	4.05
South Manchurian	2-8-2	22½ by 26	180	54	194,000	263,500	56,000	3.46
L. & N.	2-8-2	1-23 by 28 }						
		2-23 by 32 }	200	63	245,500	334,000	65,700	3.73
Mo. Pacific	2-8-2	1-23 by 28 }						
		2-23 by 32 }	200	63	244,500	340,000	65,700	3.71
Wabash	2-8-2	1-23 by 28 }						
		2-25 by 32 }	200	64	252,000	342,000	64,600	3.90
C., R. I. & P.	4-6-2	22½ by 28	190	74	187,000	301,000	46,400	4.03
Mo. Pacific	4-6-2	22½ by 28	190	73	191,000	311,000	47,000	4.06
L. & N.	4-6-2	22½ by 28	190	73	177,000	295,000	47,000	3.80
Imperial Govt. Rys., Japan	4-6-2	17¾ by 26	180	63	107,000†	188,000†	29,800	3.60
N. Y. C.	4-8-2	25 by 28	200	69	241,500	368,000	64,700*	3.73
Lehigh Valley	4-8-2	25 by 28	200	69	246,500	369,000	64,700	3.81
D. L. & W.	4-8-2	25 by 28	200	73	256,000	382,000	61,100	4.20
So. Pacific	4-10-2	1-25 by 28 }						
		2-25 by 32 }	225	63½	316,000	442,000	83,500*	3.80
Union Pacific	4-10-2	1-25 by 28 }						
		2-25 by 30 }	210	63	288,000†	407,000†	78,000	3.7

*Not including booster. †Estimated weight.

no small amount of mechanical trouble had been experienced in the past. There is further significance in the fact that subsequent to January, 1924, thirty-nine three-cylinder locomotives were built and delivered to 12 different roads. All of these locomotives, with the exception of five of the Mikado type built for the South Manchurian, were placed in service on railroads in the United States. At the present time a total of 42 three-cylinder locomotives have been delivered and placed in service and 10

other, the main line via Wilkes Barre. The ruling grade on the back-track is 61.5 ft. per mile. On the main line there is a water-level grade from Coxton to Wilkes Barre, then a 21-mile grade to Mountain Top, which consists of 3 miles at 45 ft. per mile, 2 miles practically level; 11 miles at 95.7 ft. per mile and the last 5 miles at 15.9 ft. per mile. The ruling grade westbound is 69 ft. per mile.

One of the difficult operating problems which the Lehigh Valley has encountered has been the handling

of milk trains in this district. Tests were made to compare the performance of the three-cylinder locomotive on these trains. Table III shows a comparison of the Pacific type locomotives previously used with the No.

TABLE II—SOME TYPICAL MODERN TWO-CYLINDER LOCOMOTIVES

Class	Cylinders dia. and stroke, in.	Steam pres- sure, lb.	Drivers, dia., in.	Weight on drivers, lb.	Total weight, lb.	Tractive force, lb.	Factor of adhesion
2-8-2	27 by 32	190	63	240,000	325,000	60,000	4.00
2-8-2	27 by 30	200	63	237,900	325,200	59,000	4.03
2-8-2	25½ by 32	220	64	245,580	327,430	63,200	3.89
2-8-2	28 by 32	200	63	271,500	356,500	67,700	4.01
2-8-2	27 by 32	200	63	239,000	325,000	63,000	3.80
2-8-2	28 by 30	200	63	245,300	335,800	63,500	3.87
4-6-2	27 by 28	200	79	197,000	306,000	43,900	4.49
4-6-2	27 by 28	185	73	180,500	288,000	44,000	4.10
4-6-2	27 by 28	200	73	179,500	299,000	47,500	3.78
4-6-2	27 by 28	205	80	201,800	308,900	41,845	4.82
4-6-2	26 by 28	210	75	175,500	292,000	45,000	3.91
4-8-2	28 by 30	200	69	243,000	352,000	58,000	4.19
4-8-2	27 by 30	250	72	275,000	385,000	64,550	4.16
4-8-2	29 by 28	200	73	238,000	357,000	54,830	4.34
4-8-2	28 by 30	200	69	257,500	376,000	58,000	4.44
4-8-2	27 by 30	210	74	245,000	364,000	52,750	4.64
4-8-2	28 by 30	200	69	243,500	353,000	58,000	4.2

5000. Table IV gives comparative data as to the make-up of milk trains.

It will be noted from Table IV that the average train eastbound consisted of 19 loaded milk cars and one caboose, which, previous to the introduction of the three-cylinder locomotive, had been handled by two Pacific type locomotives. Westbound, the average milk train consisted of 38 empty cars and two cabooses and was previously handled from Leighton to Mountain Top with two Pacific type locomotives. When Locomotive No. 5000 was placed in service on these trains it was found that there was no difficulty in handling them in either direction

trip of 290 miles in favor of the three-cylinder locomotives as compared with the coal consumption of a Class K-5½ Pacific type locomotive. Aside from the direct fuel saving which may be credited to the three-cylinder locomotive, there is an additional saving due to the elimination of the helper engine, with a consequent saving of crew wages, fuel, supplies, etc.

In express train service one of the three-cylinder locomotives has handled a train consisting of 16 loaded express cars over the 21-mile grade from Wilkes Barre to Mountain Top without a helper. It is 11 miles from Wilkes Barre to Conway, which is at the foot of the 95-ft. per mile grade. A two-cylinder Pacific type locomotive and helper had previously been assigned to this train.

TABLE III—COMPARISON OF LOCOMOTIVES USED ON LEHIGH VALLEY MILK TRAINS

Railroad class	K-2½	K-5½	S-1
Type	4-6-2	4-6-2	4-8-2
No. of cylinders	2	2	3
Diam. and stroke	25 in. by 28 in.	27 in. by 28 in.	25 in. by 28 in.
Diam. of drivers	77 in.	73 in.	69 in.
Boiler pressure	215 lb.	205 lb.	200 lb.
Weight on drivers	161,940 lb.	204,560 lb.	246,500 lb.
Weight, total	262,160 lb.	311,900 lb.	369,000 lb.
Tractive force	41,500 lb.	48,700 lb.	64,700 lb.

The three-cylinder locomotive experienced no difficulty in starting this train of 16 cars from Conway and making the 16-mile run from Conway to Mountain Top in the schedule time of 30 minutes.

Louisville & Nashville

The L. & N. has placed two locomotives of the three-cylinder type in service—a Pacific and a Mikado. The



One of an Order of 10 Three-Cylinder 4-10-2 Type Locomotives, Part of Which Have Recently Been Delivered to the Southern Pacific

over this district without the aid of a helper engine. Later reports are to the effect that the three-cylinder locomotive is now handling from 20 to 23 loaded milk cars eastbound and from 42 to 47 empty milk cars westbound.

Comparative records on fuel consumption show a direct saving of approximately two tons of coal for a round

Pacific type has been in service but a short time and, as yet, no information is available on its performance. The Mikado was placed in freight service in November, 1924, and several test runs were made during the period from February 17, 1925, and April 3, 1925, over the district between DeCoursey, Ky., and Ravenna.

It is 117 miles between these two points, 91 miles of

which is over the main line from DeCoursey south to Patio, Ky., and the remaining 25 miles over a cut-off from Patio to Ravenna, via Irvine. From DeCoursey to Patio is a rolling profile with average grades of approximately 0.45 per cent and maximum grades of 0.66 per

TABLE IV—COMPARISON OF LEHIGH VALLEY MILK TRAIN OPERATION
With locomotive
No. 5000

Direction	East	West	East	West
Ruling grade, ft. per mile.....	61½	69	61½	69
Average cars in train	19 loads 1 caboose	38 empty 2 cabooses	19 loads 1 caboose	38 empty 2 cabooses
Lead engine, class.....	K-5½	K-5½	S-1	S-1
Lead engine, tractive force.....	48,720 lb.	48,720 lb.	64,700 lb.	64,700 lb.
Helper engine, class	K-2½	K-5½	None	None
Helper tractive force	41,530 lb.	48,720 lb.	.....	.....
Total tractive force	90,250 lb.	97,440 lb.	64,700 lb.	64,700 lb.
Total weight of engines and tenders	574,000 lb.	623,800 lb.	570,000 lb.	570,000 lb.

cent and with maximum curves of six degrees. There is a gradual ascent from DeCoursey at an elevation of 495 ft. to Patio which is at an elevation of about 975 ft. From Patio to Ravenna, over the cut-off, the line drops gradually to an elevation of about 630 ft. at Ravenna. On this line the average grade is about 0.4 per cent, with

TABLE V—COMPARISON OF L. & N. MIKADOS USED IN THE TESTS

	Three-cylinder J-5 1999	Two-cylinder J-4 1769
Railroad company class.....	J-5	J-4
Road number	1999	1769
Cylinders, bore and stroke, in.....	1-23 by 28 2-23 by 32	27 by 32
Weight on drivers, lb.	245,500	239,000
Total weight of engine, lb.	334,000	320,000
Weight of tender loaded, lb.	190,000	190,000
Total weight engine and tender, lb.	524,000	510,000
Tractive force, lb.	65,700	60,000
Increase, J-5 over J-4, lb.	5,700	.....
Increase, per cent.....	9.5	.....
Factor of adhesion.....	3.73	3.98
Boiler pressure, lb.	200	190
Heating surface, tubes and flues, sq. ft.	3,978	3,978
Heating surface, firebox and arch tubes, sq. ft.	345	319
Superheating surface, sq. ft.	993	993
Combined heating surface, sq. ft.	5,316	5,290
Grate area, sq. ft.	70.8	70.8

maximum grades of 0.5 per cent and maximum curves of five degrees.

Table V shows a comparison of the principal characteristics of the two and three-cylinder Mikados used on the test runs mentioned above and in Tables VI and VII

thousand gross ton miles as compared with 164.08 for the two-cylinder—a saving of 16 per cent. On the northbound trips the three-cylinder averaged 52.41 lb. per thousand gross ton miles as against 59.87 for the two-cylinder—a saving of 12.5 per cent. The evaporation in pounds of water per pound of coal, in both directions, favored the three-cylinder.

The increase in tonnage handled on the grade from Ravenna to Patio, northbound, was 15.8 per cent, of which 6.3 per cent was actually due to the three-cylinder feature. From Patio to DeCoursey the increase in tonnage amounted to 17.7 per cent, of which 8.2 per cent can be directly credited to the three-cylinder feature.

Chicago, Rock Island & Pacific

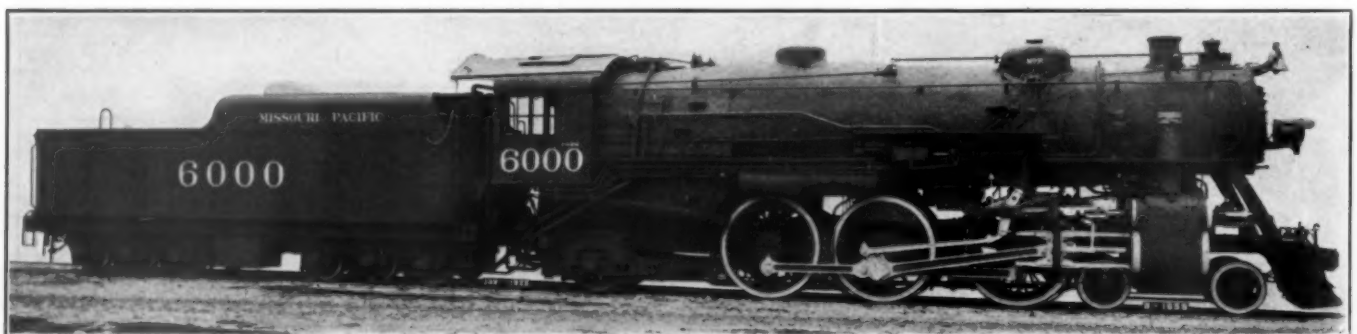
The Rock Island three-cylinder Pacific No. 999 was delivered in November, 1924, and placed in freight service

TABLE VI—SERVICE TONNAGE TESTS OF L. & N. THREE-CYLINDER LOCOMOTIVE NO. 1999 VS. LOCOMOTIVES OF J-4 CLASS FROM RAVENNA TO PATIO AND PATIO TO DE COURSEY BETWEEN FEBRUARY 17 AND APRIL 3, 1925, INCLUSIVE

RAVENNA TO PATIO			
Class of locomotive	J-5 3-cyl.	J-4 2-cyl.	
Number of test runs made.....	3	5	
Miles run	81	135	
Maximum tonnage handled.....	4,400	3,800	
Increase J-5 over J-4, tons.....	600	.....
Increase J-5 over J-4, per cent.....	15.8	.....
Increase tonnage handled on account of greater tractive force	361	.....
Increase tonnage handled on account of greater tractive force, per cent	9.5	.....
Increase tonnage handled on account of 3 cylinders.....	339	.....
Increase tonnage handled on account of 3 cylinders, per cent	6.3	.....
PATIO TO DE COURSEY			
Number of test runs made	9	4	
Miles run	812	361	
Maximum tonnage handled	5,650	4,800	
Increase J-5 over J-4, tons.....	850	.....
Increase J-5 over J-4, per cent.....	17.7	.....
Increase tonnage handled on account of greater tractive force	456	.....
Increase tonnage handled on account of greater tractive force, per cent	9.5	.....
Increase tonnage handled on account of three cylinders	394	.....
Increase tonnage handled on account of three cylinders, per cent	8.2	.....

on December 9, 1924, making several round trips between Chicago and Silvis, a distance of 161 miles. Then it was placed in local passenger service and made seven round trips on a 181 mile run between Chicago and Rock Island, Ill.

In fast passenger service this locomotive ran opposite



Three-Cylinder Pacific Type Recently Placed in Service on the Missouri Pacific

comparative information is given in connection with tonnage and fuel consumption.

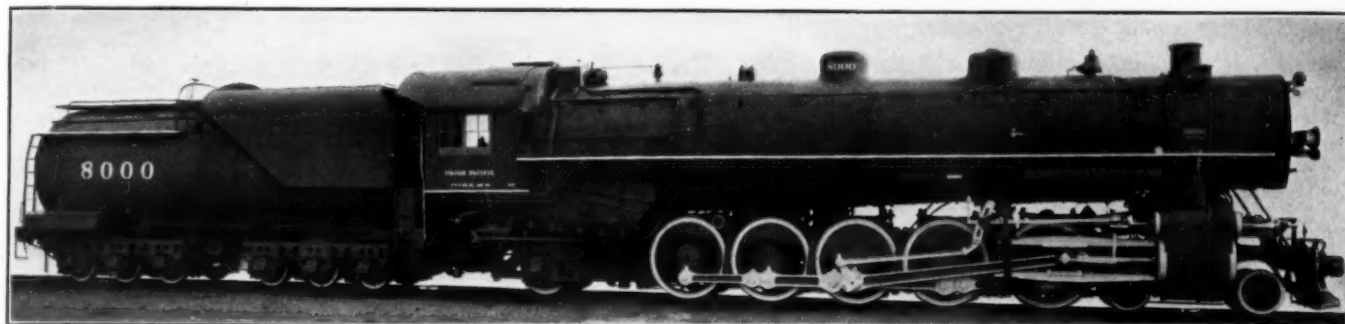
The table shows the results of fuel and water tests embracing two southbound and two northbound trips representing empty car movements south and loaded coal car movements north. On the southbound trips the three-cylinder locomotive averaged 138.07 lb. of coal per

to a Mountain type and handled some of the heaviest and fastest passenger trains running out of Chicago on the Illinois division over ruling grades of 0.6 per cent. No complete data is yet available as to performance and fuel consumption. It is reported, however, to have handled the same trains as the larger Mountain type locomotives in an entirely satisfactory manner. The principal

dimensions of Engine No. 999 will be found in Table I and for comparison the following data is given on the Mountain type locomotive:

Cylinders	28 in. by 28 in.
Wheel centers	66 in. diameter.
Tractive force	47,900 lb.
Grate area	63 sq. ft.

5 deg. Certain heavy passenger and milk trains eastbound out of Scranton and passenger trains westbound, Stroudsburg to Pocono Summit, have, in the past, been assisted by helper engines. The three-cylinder engines, when first placed in fast service, were used on both milk and passenger trains and demonstrated their ability to



A 4-10-2 Type Locomotive Just Delivered to the Union Pacific

Total heating surface	4,684.7 sq. ft.
Weight on drivers	252,500 lb.
Total weight of engine	368,500 lb.
Total weight engine and tender	564,500 lb.

It will be noted that with a difference of only 1,500 lb. tractive force between the two locomotives there is a difference of 65,500 lb. weight on drivers.

Delaware, Lackawanna & Western

Two three-cylinder Mountain type locomotives were delivered to the Lackawanna in the early part of April, 1925. This road encounters particularly difficult grade conditions over the Pocono Mountains between Scranton, Pa., and Stroudsburg, the ruling grade eastbound being 1.5 per cent with a maximum curvature of 5.24 deg., and westbound, 1.7 per cent with a maximum curvature of

handle 23 and 24 cars of milk eastbound, Scranton to Lehigh, on schedule time, without the assistance of a helper. In passenger service, 11 passenger cars is the usual consist of trains and these engines have handled them on fast schedules successfully. On one occasion, one of these locomotives handled 12 cars, eight of which were Pullmans, over the 140-mile run east from Scranton, Pa., to Hoboken, N. J., without a helper. On some runs in passenger service, speeds up to 70 m.p.h. have been attained, which is the speed limit on this line.

Missouri Pacific

The Missouri Pacific now has two three-cylinder locomotives in service—a Pacific and a Mikado. The former was delivered in January of this year and the latter in



The L. & N. Three-Cylinder Mikado Type Locomotive

February. The Mikado was not actually placed in road service until the latter part of April, having been used for some time on the test plant.

The Pacific type locomotive, No. 6000, after having been broken in in freight service was placed in passenger service and has made a number of runs between Kansas City, Mo., and St. Louis and between Hoxie, Ark., and St. Louis. Between the latter points a particularly difficult two per cent grade four miles long is encountered. Locomotive No. 6000 handling train No. 4, Hoxie to St. Louis, with 11 cars, was able to negotiate this grade without trouble and reached the top at a speed of 23 m.p.h. On a run from St. Louis to Kansas City with seven cars, the coal and water consumption was recorded at 14 tons, 343 lb. and 20,613 gal. respectively. The mileage between these points is 283.

Other Locomotives Now in Service

Five three-cylinder Mikado type locomotives were placed in service on the Wabash during March and April, 1925. At this time they have covered only about 2,000

TABLE VII—SERVICE FUEL TESTS OF THREE-CYLINDER LOCOMOTIVE No. 1999 (CLASS J-5) VS. LOCOMOTIVE No. 1769 (CLASS J-4) BETWEEN APRIL 1 AND APRIL 9, 1925

	Southbound DeCoursey to Ravenna		Northbound Ravenna to DeCoursey	
Locomotive No.....	1999	1769	1999	1769
Train-miles	117	117	117	117
	117	117	117	117
Total	234	234	234	234
Gross tons.....	1,564.05	1,608.25	5,689.80	4,899.45
	1,591.75	1,656.70	5,644.50	4,835.30
Total	3,155.80	3,264.95	11,334.30	9,734.75
Gross ton-miles.....	182,993	188,165	665,706	573,235
	186,235	193,834	660,406	565,730
Total	369,228	381,999	1,326,112	1,138,965
Lb. coal used.....	24,280	30,800	32,300	34,200
	26,700	31,840	37,200	34,000
Total	50,980	62,640	69,500	68,200
Lb. coal per train-mile..	207.52	263.24	276.06	292.32
	228.20	272.13	317.94	290.59
Average	217.86	267.86	297.01	291.45
Lb. coal per 1,00 gross	132.68	163.68	48.52	59.66
ton-miles	143.36	164.26	56.33	60.10
Average	138.07	164.08	52.41	59.87
Lb. water used.....	150,750	190,300	213,300	238,300
	159,600	172,550	244,950	197,200
Total	310,350	362,850	458,250	435,500
Lb. of water evaporated	6.21	6.18	6.60	6.96
per lb. of coal used..	5.98	5.42	6.58	5.80
Average	6.09	5.79	6.59	6.38

miles, and no detailed information is available as to their performance.

Ten 0-8-0 three-cylinder switchers have been in hump yard service on the New York, New Haven and Hartford since December, 1924, but as yet no performance data is available. Part of an order for 16 4-10-2 type locomotives for the Southern Pacific and one of the same type for the Union Pacific have just been delivered, but at the present writing have hardly been placed in service. The performance of these locomotives will be watched with interest not only because of the employment of the three-cylinder principle, but because they also are the first locomotives to use the four-wheel leading truck with a five-coupled driving wheelbase.

Conclusion

Notwithstanding the mechanical difficulties which were encountered in early designs it has been admitted that the three-cylinder type possesses the following advantages over the two-cylinder type:

1—Increased tractive force for the same weight on driving wheels because of a more uniform torque.

- 2—Less dynamic augment of weight at the rail.
- 3—More uniform drawbar pull.
- 4—Better combustion of fuel.

In the comparatively short period of a little more than two years, the experience of American railroads has been such as to justify these claims. In present designs it has been found possible to effect as high as 15 per cent increases in tractive force above that of a two-cylinder type of the same weight on drivers. Such tests as have been made with the otheograph have indicated the possibilities of eliminating, to a large extent, the serious effects of dynamic augment at the rail. The absence of nosing and a remarkable lateral steadiness has been noticeable, particularly at high speed. The more uniform drawbar pull reflects itself in the ability to start unusually heavy trains with a marked absence of jerking. As to fuel economy, while at this time no great amount of information is available, the experience of two roads has been that a three-cylinder locomotive is capable of saving from 10 to 16 per cent in fuel as compared with a two-cylinder locomotive of similar proportions.

Mechanical officers who were more or less familiar with the maintenance difficulties that prevented the earlier three-cylinder locomotives from being successful were justifiably skeptical as to the success of the present type of three-cylinder locomotive when it again attracted attention in 1922. At the present time one three-cylinder locomotive in this country has been in active service for a period of nineteen months and several more have been in service for periods ranging from five to eight months. While experience up to this time has not conclusively proved that, in the long run, three-cylinder locomotives can be maintained for less or even as little expense as two-cylinder locomotives, the indications are that the admitted increase in revenue earning capacity will not be offset by any greatly increased maintenance costs.

Record Car Loading Expected in 1925

FROM information now available, railroad freight traffic during 1925, on the basis of the number of cars loaded with revenue freight, will equal, if not exceed, that of previous years, according to an estimate for the year made in a report submitted at the regular spring meeting of the member roads of the American Railway Association on May 15 by the Car Service Division.

Total loading of revenue freight for the year, it is estimated, will approximate 50,494,570 cars, an increase of about 682,450 cars, or 1.4 per cent over 1923, when more cars were loaded than ever before for any similar period. It is also expected that the total for 1925, according to the present business outlook, will exceed 1924 by about 1,976,350 cars, or 4.1 per cent.

"This estimate," said the report of the Car Service Division, "is our best judgment supplemented by reports received from the commodity committees of the various Regional Advisory Boards, which are located throughout the United States, as to the general business outlook and as to what the car requirements of various industries will be for the remainder of the year."

"For the first 18 weeks this year—January 1 to May 2, inclusive—the total loading of all commodities has amounted to 16,468,608 cars, an increase of 468,817 cars, or 2.9 per cent over the corresponding period last year and an increase of 425,985 cars, or 2.7 per cent, over the corresponding period in 1923. All commodities, during

the first 18 weeks this year, showed increases compared with the same period last year except grain and grain products, livestock and coal.

"In preparing this estimate for the year, the Car Service Division has assumed that revenue freight loading in June and July of this year will be less than in 1923, on the theory that continued adequate transportation has resulted in business organizations carrying smaller stock in advance of actual necessities than has been the practice in previous years. This tendency, in our opinion, will cause heavier loading in the fall months this year to meet the demands of that period and will cause a new high peak in the volume of freight carried in September and October by the railroads, which could be obviated, to some extent, by earlier shipments in anticipation of the fall needs.

"While it may be that we are overly optimistic as to the volume of traffic that will be handled during 1925, nevertheless we cannot see any substantial grounds to support statements we hear occasionally about a decline in business which would justify us making any change in our estimate.

"Carloading figures, with the exception of coal, show an increase over the previous two years. For the first three months, this year there was an increase in miscellaneous loading, which includes manufactured products other than lumber. There was also an increase in less than carload lot loading, due in part to receivers of freight recognizing that it is unnecessary to accumulate stocks and that adequate transportation service, to which they have become accustomed during the past three years, gives them the advantage of having to carry only what is necessary and letting the manufacturer carry the balance of what they formerly carried in stock. This, however, does not indicate any decrease in business but does, in effect, indicate a more even flow of traffic. Our estimate necessarily deals, not with the tonnage to be moved, but with the carloads to be handled and with that as a basis, we believe that our figures are conservative.

"Lumber loading shows no decrease and there apparently is very little, if any, lessened building activity. No strikes in the building trades of any moment are being reported. There was a decrease in coal production during the first three months in 1925 compared with 1923, that decrease amounting to 10.7 per cent. There also was a decrease of 8.8 per cent compared with 1924.

"The lake coal movement so far shows an increase of 372,240 tons over the previous year and our estimate of the total loading for the year is made with the idea that there will be approximately 27 million tons of coal transshipped to upper lake points during the year and that the total coal production in 1925 will be approximately 480 million tons, considerably less than in 1923 but about the same as in 1924.

"Reports from commodity committees of the Regional Advisory Boards indicate almost without exception an anticipated increase in business for the next three months as compared with 1924.

"It is impossible to figure very much on the crop movement at this date except in a general way, but conditions up to date apparently do not suffer by comparison with one year ago, except in Oklahoma and Texas where there has been some shortage in rain fall. In the elevators at Atlantic and Gulf ports on April 15 there were 16,163 cars of grain, an increase of 10,275 cars, or 174 per cent over the same period last year. In elevators at other than Atlantic and Gulf ports as of April 15, there were 100,458 cars of grain, an increase of 1,947 cars over the same period the previous year. From these figures, it is estimated that there will be, prior to the new crop, about the same movement of grain as last year.

"In order to keep pace with the industrial development

of the nation, the railroads from January 1, 1923, to April 1, 1925, placed in service 398,442 freight cars, of which 44,153 were installed during the first three months this year. On April 1, freight cars on order totaled 46,126. With the installation of the new cars, the railroads have been able to retire much obsolete equipment with the result that the average carrying capacity of freight cars on April 1, this year, was 44.5 tons compared with 43.8 tons in 1924 and 43.1 tons in 1923.

"The railroads also placed in service during the first three months this year 430 locomotives, which made a total of 6,713 installed since January 1, 1923. Locomotives on order on April 1 totaled 315.

"The average tractive power of locomotives on April 1, 1925, was 40,048 pounds, an increase of 1.5 per cent over that for April 1 last year and an increase of 7.0 per cent over two years ago.

"Despite the fact that loading of revenue freight for the first 18 weeks this year has been the heaviest for that season of the year in history, the number of surplus freight cars in good repair and immediately available for use has been considerably greater than it has ever been before in previous years, there having been on April 30 this year 337,181 surplus cars, an increase of 7,692 cars over the same date last year and an increase of 323,625 cars over the same date in 1923."

As to the condition of equipment, the report showed that the railroads on April 15 had 12,066 locomotives in need of repair, 18.8 per cent of the number on line but a smaller number than they had on the same date both in 1924 and 1923. The number of freight cars in need of repair on April 15 this year, totaled 190,165, or 8.2 per cent, of the number on line, an increase of more than 13,000 compared with the same date last year but a decrease of nearly 24,000 under the same date in 1923.

The American Railway Association at its meeting reviewed the general situation and expressed confidence in the ability of the railroads of this country to provide adequate transportation during 1925 in order to meet increased traffic demands.

Report on Collision at Manhattan Transfer

THE Interstate Commerce Commission has just issued a report, signed by W. P. Borland, director of the bureau of safety, and dated March 19, on the collision of westbound passenger trains on the Pennsylvania Railroad at Manhattan Transfer, N. J., on February 24, at 9:33 A. M., in which three employees were killed and 36 passengers, 21 employees and two Pullman employees were injured. There were two dining cars in the leading train, which explains the large number of injuries to employees.

As reported in the *Railway Age* of February 28, page 527, westbound passenger train No. 219 ran into the rear of westbound passenger No. 185, which was standing at the station; and the cause was the failure of air brakes on No. 219. The angle-cock in the air brake pipe at the rear of the electric locomotive of No. 219 had been almost closed, so that there was little or no action of the brakes on any of the seven cars in the train. Train 219 was moving at about 30 miles an hour and the dining car at the rear of the standing train was crushed for half its length.

The inspector accepts the testimony of employees that train 219 had been properly made up, and the air brakes tested; and that there is no indication that the angle cock

had been moved, either by hand or by accident, while on the journey of about 15 minutes from the starting point at the Pennsylvania station, New York, to the point of collision; the conclusion is that the angle cock had been moved within the three or four minutes after the brakes were tested and before the train started; "but investigation failed to disclose by whom the angle cock was closed."

About 1,000 ft. after leaving the station, and while running at about 18 miles an hour on a descending grade, the motorman made a running test of the brakes, and he said that the speed was then slackened (the motor weighs 156 tons); but the inspector holds that this test was not made in such a manner as to furnish reliable information concerning the condition of the train brake equipment. The time consumed was too short and the reduction in speed was too slight. The motorman admitted that he had not paid particular attention to the length of the brake pipe exhaust.

Asked why he did not go back when he saw his danger, or send his helper back, to operate a conductor's valve, the motorman said that that did not occur to him. He had sounded the whistle signal calling for brakes, and it was to be assumed that this would be heard; but it was not heard by any employee in the cars.

The air whistles used on the electric motors on this line are held to be inadequate in volume. The brakes on the cars in the train went on, because of a ruptured pipe, just after the collision occurred, thus giving conclusive evidence that the use of the conductor's valve would have stopped the train.

The report refers to the automatic stops on this section of the road; but there was no stop at the signal which ought to have stopped this train and, of course, the stop could not have done more than the motorman did in setting the brakes.

New Jersey Report

The Public Utility Commission of New Jersey, reporting on this collision, recommends that an additional running test be made after trains have attained full speed, west of the Hudson River; and that the electric motors be equipped with louder whistles. The New Jersey report, which is dated May 1, gives the total estimated damage to cars and locomotives at \$53,059.

Simple Rules for Diverting Traffic While Laying Rail*

By P. J. McAndrews

Roadmaster, Chicago & North Western, Sterling, Ill.

FOLLOWING the increase in double-track mileage the plan of relaying rail by diverting the traffic during certain periods of the day to one of the tracks for the distance between adjacent stations, came into vogue and has been gradually extended until it has now become a rather common practice. On lines having both trailing and facing cross-overs at each station or close enough together for economical operation it should be and is a simple matter to carry out the plan of temporary single-track operation for short distances, while on lines where the most of the cross-overs are trailing, this plan entails back-over movements. The delays and hazards introduced by such movements have led to the practice of installing temporary facing cross-overs where necessary and this plan was adopted in carrying

out rail renewals on the Galena division of the Chicago & North Western in 1924.

Another special arrangement in this connection is to place at the temporary cross-over and also at the normal cross-over at the next station, small cabins for an operator and a special dispatcher. These are equipped with a telegraph wire for blocking and communication from end to end of the single track district and a train dispatching phone so that the local dispatcher may communicate with the division dispatcher at headquarters, and keep himself informed as to the arrival of trains, their importance, etc. Each of these cabins is equipped with a "Nunn" train order signal which is of light construction and easily installed.

With this arrangement of cross-overs and cabins the work is carried out as follows:

A local train dispatcher (usually an extra dispatcher from the chief's office) takes charge at the cabin stationed at the end of the single track, the approach to which is in the normal direction of traffic, with an operator at the other end, this local dispatcher being in absolute control of movements through that district.

The roadmaster or his assistant advises the division chief dispatcher as to the location of the single track district in which, and during what hours of the day the steel gang will use one of the tracks. The dispatcher in turn issues a 19 order in the following form to all trains leaving terminals:

"Effective at time date and during the life of this order, the *eastward* (or *westward*, as the case may be) track will be used as single track between the hours of (time) and (time) between the temporary facing cross-over located at (indicate location) and the cross-over at (indicate location)."

Telegraph offices with Nunn train order signals are located at each of these cross-overs, and between these hours, trains in either direction will be governed by the position of the train order signal.

If the signal shows a clear indication, and in addition a proceed signal is given by the train dispatcher or operator on duty, trains may proceed without further orders.

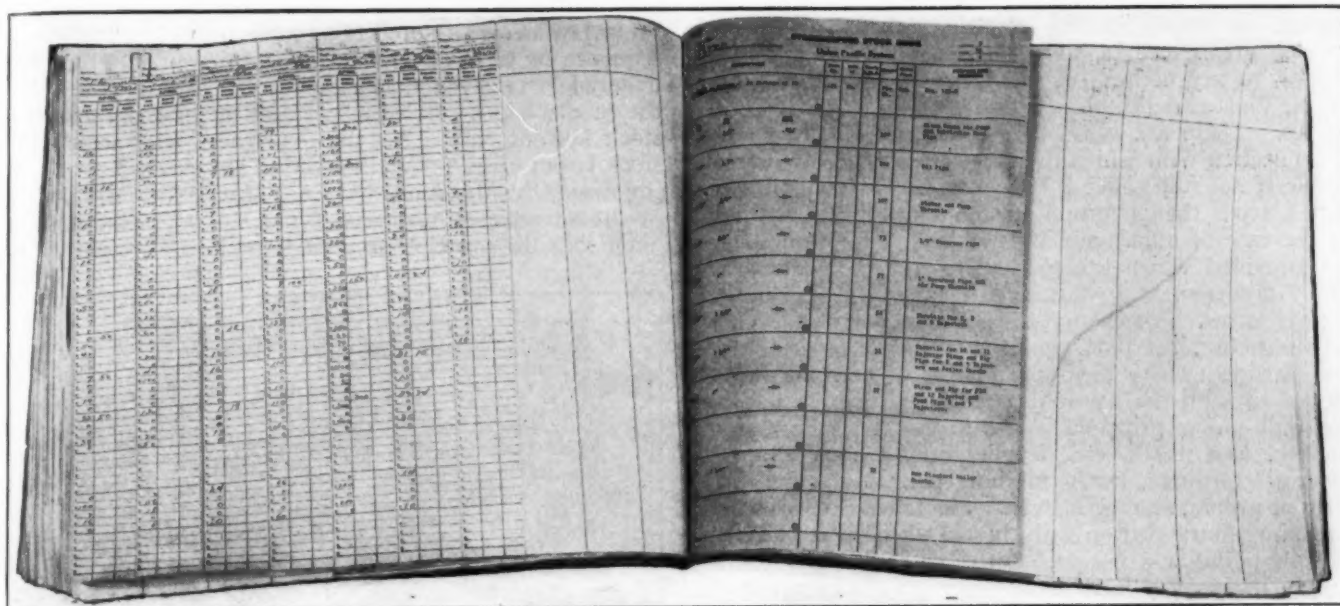
In addition to the order quoted above, instructions are bulletined limiting the speed over cross-overs.

With the absolute protection provided as outlined, the steel gang may work on the specified section of track without regard to traffic within the specified hours. Work trains are also permitted to operate on the track being relaid, through an understanding with the local dispatcher.

Arrangements are made so that the required temporary cross-over is installed sufficiently in advance of the need at the next station so that when one district is completed the advance may be made to the next without delay. Cabins are moved either on the work train or by motor car and trailer, the cabins being small and light enough to be so handled. During the time necessary for the change we have usually been able to use passing sidings for train movements through stations while the steel gang continued the work through the yard.

It is of interest to record the actual delays to traffic during the 18 days that this operation was in progress. In that period 153 passenger trains were handled with an average delay of 39 sec. each, and 318 freight trains with an average delay of a small fraction over three minutes each, the latter figure including delays to all classes of freight, the greatest delays being to local freights having short divisions which did not result in overtime to the crews. The total relay to freights amounted to a little over 15 hours or less than one hour per day for the total of about 17 freight trains per day.

*Abstracted from a paper presented before the Maintenance of Way Club of Chicago, on April 14, 1925.



Unit Piling Promotes Accuracy of Stock Books—The Master Stock Book with the Master List on the Right and the Coupons for April Posted on the Left

Unit Piling and Standardization Augment Stores Efficiency

Extended experience of Union Pacific with these practices proves them decisive agencies of progress

[This is the second of three articles devoted to a study of the purchasing and stores organization of the Union Pacific. The first article dealing with the centralization of control, the method of handling forest products and with the system of stock keeping employed, appeared in issue of the *Railway Age*, of May 9, page 1146. The third and last will appear in an early issue.—EDITOR.]

IT is an old saying that "a chain is no stronger than its weakest link," but the maxim was none the less applicable to the situation confronting the Union Pacific in its efforts to bring the investment in supplies to the minimum consistent with efficient operation under the varying conditions that arise on a railroad. It was one thing to provide a system for scaling down surpluses and avoiding excessive purchases through the medium of centralized control, master stockbooks, time schedules and sectional organization. But obviously the effectiveness of any plan of this character was dependent upon the accuracy with which results were reported. As outlined in the previous article, each of these features of the system was devised with a view to promoting this accuracy but in the final analysis it was evident that the accuracy of results depended upon the method of taking the inventory. Was estimating to be sanctioned or an absolute count required? The Union Pacific chose the latter course and the outcome was the inauguration of unit piling.

Unit Piling Highly Developed

Unit piling is now a familiar practice over the country. But on the Union Pacific, where the practice is claimed to have originated, it is so zealously observed as almost to

leave the impression with the visitor that in the Union Pacific alphabet U. P. stands for unit piling. As the name implies, the practice is one of storing the material in units. This is accomplished in the main by providing metal trays of standard dimensions and stacking the material in these trays instead of directly on the shelving. Some material is laid flat in these trays, while in others the materials are in the standing position, depending upon their shape. Likewise some trays are loaded with but a single tier of articles while others are loaded with two or more tiers, depending upon their size. When a tray is filled to the specified capacity a marker is attached on the forward end to show the count and the tray is placed in position on the shelf. If only one tray is required for the articles in question the marker is omitted since this is the working tray. If two or more trays are required to carry the total quantity of one item the marker on each tray shows the cumulative count up to the level of that tray so that when taking stock it is possible to tell almost instantly the exact quantity of any material on hand, the process being merely to note the cumulative count on the last full tray and count the remaining items in the top or working trays. When a tray is empty it is simply removed from the shelf to provide access to the tray below.

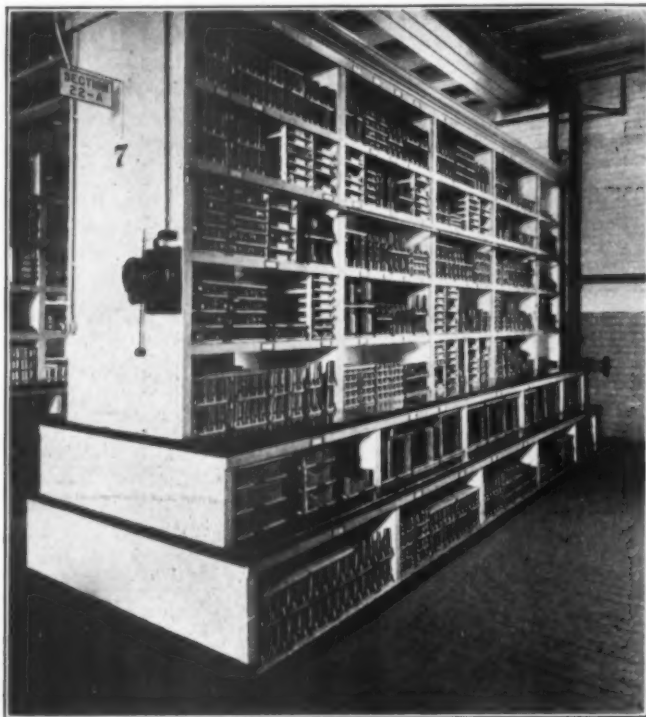
All Material Subjected to Unit Piling

The surprising thing about this system is the extent to which unit piling has been adopted in keeping the stock. On the Union Pacific the bulk of all shelf material is carried on trays, which are one-half inch deep and vary from 4 in. to 12 in. wide and in standard lengths of

17 in. Thus all bolts of whatever length and size are stocked in trays, likewise electric globes, packages of screws, grease cellars, fibre insulation, valves and lamp shades, to say nothing of hand saws, clay picks, engine oilers, and a multitude of small castings of irregular shapes. There are some classes of materials, of course, in connection with which the trays are admittedly impracticable if not impossible. However, no materials are excepted from the operation of the unit piling principle. In the case of nuts, nails and washers, for instance, bins are provided which are marked to afford a cumulative count according to volume. In the case of elliptical springs, tires, brooms, rolls of canvas, barrels of paint, copper tubing, iron pipe, wooden barrels, etc., special racks are provided where the same system of marking is employed as with the material carried on trays. Likewise, the unit piling principle is applied to the piling of all lumber, iron plates, etc., leaving only the collection of castings, forgings, heavy machine parts and other platform or ground storage material to be taken care of, where unit piling is carried on with the aid of the unit platform.

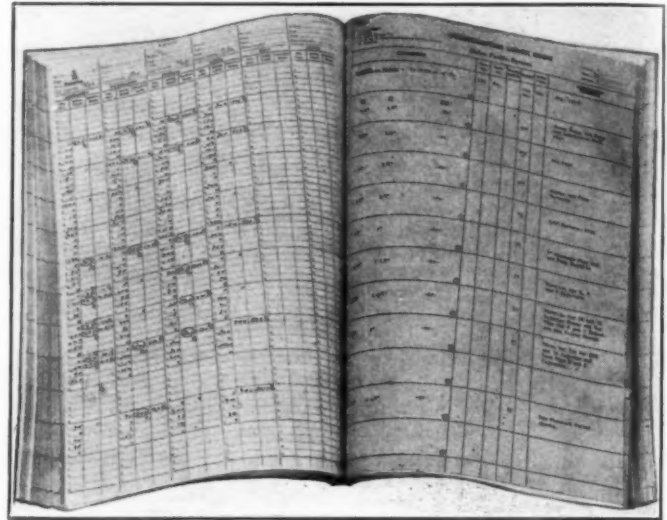
Unit piling was not introduced without some misgivings. It was a principle the practicability of which remained to be proved. It required the production of trays and their upkeep. It would cause added confusion in storehouse management by introducing complications. It would add materially to the cost of putting material away

quired was not as great as originally feared and except for a few items the objections have proved of little consequence in view (1), of the uniform way in which the material is received under the time schedule plan, (2), the smaller stock carried as a result of the more accurate stock keeping, and (3), the expertness with which the stock is put away under the section storekeeper plan. In any event, the objections have not been sufficient, in view of the advantages, to dissuade the Union Pacific against extending the principle until it is now in effect in every



A Rack of Irregular Shaped Articles Subjected to Unit Piling in the General Store at Omaha—Note the Intensity of Space Utilization

and introduce unnecessary delay. These were among the principal objections which were heard at the time of introduction. If these objections were specious initially, they became less weighty as the system was developed and improved upon. The trays cost practically nothing and their upkeep is negligible. Instead of being limited in scope to the point of causing confusion, the principle was rapidly extended until, as stated previously, almost everything is now included, and while admittedly a consumer of more time than the simple method of throwing bolts in bins and shoveling castings into pockets, the time re-



Unit Piling Expedites Inventory Taking—A Local Stock Book with the Master List of Materials on the Right and the Monthly Report of Stock on the Left

storehouse on the line, and comprehends to some extent every article in stock.

Unit Piling Insures Accuracy

The prime advantage is the better stock control that results from the systematic and orderly arrangement under unit piling. It is easier to count materials where they are piled neatly in place than where they are tumbled in a heterogeneous mass into dark bins or mingled on a shelf with other articles. The probabilities are that the count will be made in the first case, while in the second case, the probabilities are that much of the stock, at least, will not be counted. Indeed their condition may not permit of counting without an expenditure of time out of all reason.

When, in addition to orderly piling, the cumulative count is posted, it is obvious that an accurate report of stock on hand is almost inevitable. The system thus dispenses with the need of relying upon the correctness of "scientific guessing" and "storehouse estimators." By insuring that accuracy of inventory needed in reducing surpluses, unit piling won a secure position for itself on the Union Pacific.

Unit piling has also been profitable to the Union Pacific in other ways. Among these additional advantages is the ability to save time. In any storehouse it takes anywhere from a day to a week each month to count stock accurately. Previous to the adoption of unit piling it was necessary to take each item off the shelves, count or weigh it, and to repeat this process each month, since no record was kept of the work of the preceding month. With unit piling the items are counted only when they are put in stock, as a result of which the record is available almost instantly upon every stock taking. An actual check of time necessary to count the material before

unit piling and the time under unit piling disclosed an average saving of 51 per cent.

A Saver of Space

Unit piling has also proved an appreciable conserver of space, notwithstanding the fact that the trays themselves take up room. The conservation of space in the house arises from three different sources. Not a small amount



A Portion of the Track Material Yard at Grand Island, No. 6, Showing Unit Platform on the Left

of space is conserved simply as a result of orderly arrangement as distinguished from the disorderly condition of stock which is thrown loosely upon the shelves. More space is conserved as a result of being able to utilize the full height and depth of the shelf, whereas only a small portion of the shelf is available without the trays. To perfect the system in this respect an arrangement has also

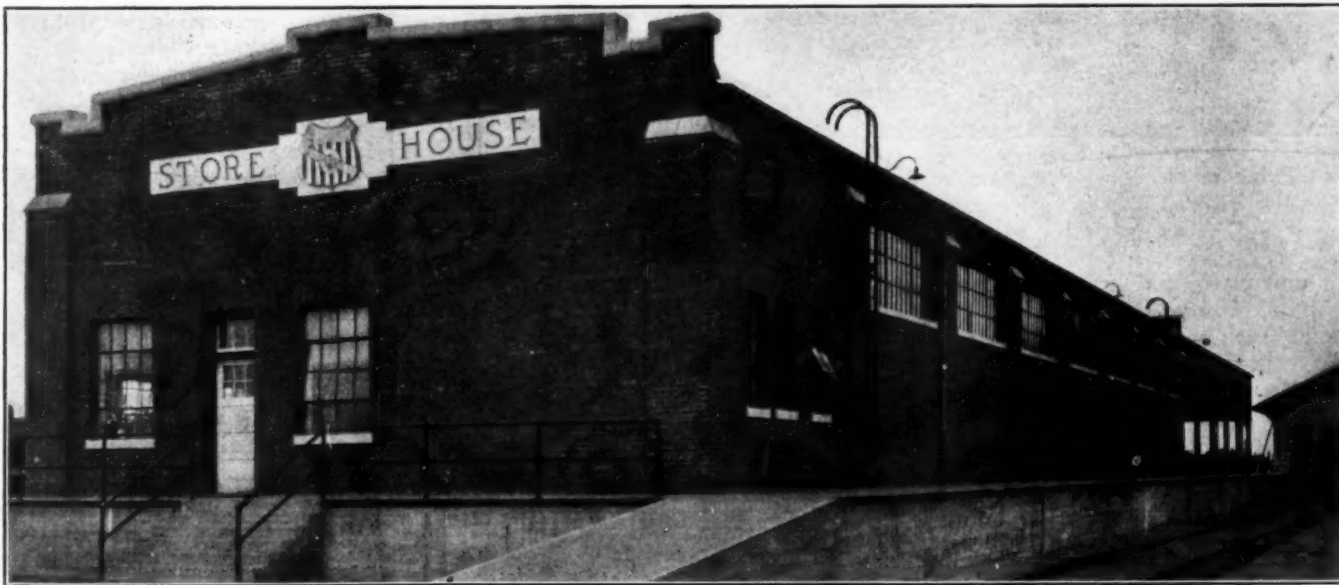
space necessary for the convenient storage of material at least 25 per cent. The value of this feature of unit piling was forcefully illustrated in the case of a storehouse which had been designed with a length of 200 ft. to meet the conditions at the time of authorization but which was finally built with a length of only 160 ft. in view of the opportunity for saving space under unit piling.

Unit piling is also the predominant factor in creating that appearance of the stores on all occasions which denotes efficient management. Its influence in this respect has been far-reaching. It has had the effect of making inventory taking less distasteful, it has promoted orderliness in other phases of store operations and upkeep by contrast and has extended its influence beyond the store into the shops and elsewhere.

Unit Platform Solves Outdoor Problem

The Union Pacific has extended the unit piling idea to the storage of castings, forgings and such other bulky materials as are normally stored on storehouse platforms or on ground areas in the vicinity. In actual practice these platforms, which are generally built up sections of planking about 6 ft. wide and 30 ft. long, have contributed so materially to the maintaining of an orderly arrangement of material, by keeping all the material within definite lines and preventing it from becoming piled in aisleways, that they have not been restricted in their use to the ground areas but have actually been installed upon the store platforms and also within the storehouse itself, in the latter place providing areas for the storing of barrels, packages and similar material not adapted to shelving or to storing in racks. As a result of their value in this respect all store platforms on the Union Pacific as well as the ground areas are completely equipped with these platforms, some carrying car castings; others brake beams, switch parts, frogs, couplers, coil springs, etc.

It is not alone for their service in this respect, how-



The New Grand Island Store House Has the Transom Lighting as Called for by the Standard Plans

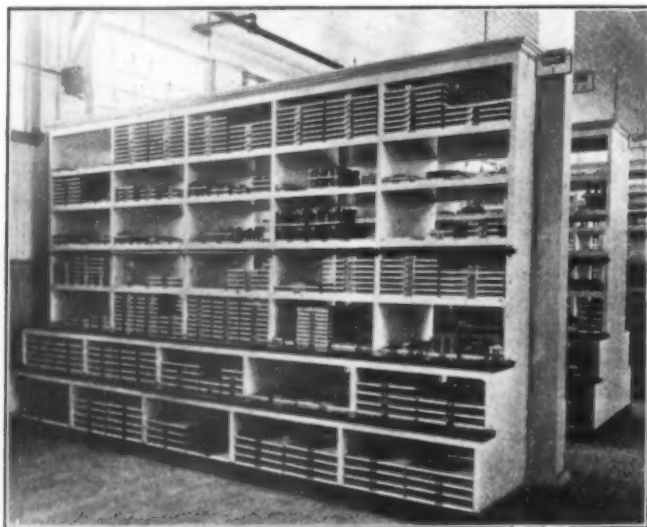
been worked out which permits of subdividing shelving by the insertion of metal uprights, the effect of which is to allow any number of trays to be placed the full height of the shelf, under conditions where this could not otherwise be done—for instance, where the articles on each tray are fragile or insufficient support is available at the side to avoid shifting of the trays. It is estimated that unit piling as practiced on the Union Pacific reduces the

ever, that the unit platforms have come to be so extensively used, for they serve quite as usefully in preventing waste, deterioration and loss of material stored in the open, by raising the material off the ground upon which it would otherwise lay by reason of the impracticability of building and maintaining solid platforms in these areas. They are also considered to render a valued service in fixing definite aisle-ways for trucking between piles,

thereby avoiding that slovenliness in the handling of heavy material on the ground or store platforms which often results where storage lines are not clearly defined and store employees are allowed to handle such materials without close supervision. It is claimed, finally, that unit platforms save at least 40 per cent of the cost of constructing solid platforms for storehouse material, to say nothing of the reduced cost of maintenance which is unusually high under storehouse service.

Standardization Given Large Range

It would naturally be expected that a railroad that would carry the principle of unit piling to the extent the Union Pacific has done would exhibit a propensity for standardization in other ways, and this is exactly the situation with the stores department of this company. To a large extent this standardization has been evolved to meet the requirements of unit piling, for without some uniformity in the facilities involved in this work it is obvious that the principle might readily fall short of a successful application. Hence the adoption of standards for stock trays, for markers, for subdividers, for special racks for those articles which will not permit of shelving,



Unit Piling in the New Storehouse at Grand Island Where the Material Racks Are Partitionless and Painted White According to Standard Plans

for unit platforms, etc. But a multitude of other factors have encouraged extended standardization of the store facilities on this road. Prominent among these are, (1) the economies that result in construction where economical plans have already been worked out; (2), the greater ease and rapidity with which needed construction or alterations can be obtained when by reason of standardization the ultimate cost can be reduced; (3), the more satisfactory arrangements that usually result from adhering to a plan that has been worked out carefully in advance under the direction and criticism of all parties interested than from plans of less certain completeness, and, (4), the large benefit of building to plans that will permit of transferring employees from one place to another under any condition without attendant confusion.

No Roof Columns in Stores Buildings

In view of these and other reasons the Union Pacific has extended standardization in the stores department to include a standard building plan to which all new structures conform as nearly as local conditions permit. There are certain features in this plan which are considered ad-

vantageous in storehouse planning, among which is that of limiting the height of local storehouses to one floor, also the adoption of a fixed width of 40 ft. This width is much narrower than the prescribed width on some roads but lends itself satisfactorily to the interior arrangement of the shelving and permits an economical roof construction without the necessity of placing roof columns within the storage and trucking areas. The width is also adapted to storehouse remodeling and erection in restricted areas. With this dimension fixed the difference in storehouse capacities obviously is merely one of length. The standard plan also calls for transom lighting, thus confining all windows to the wall area above the top of the shelving. This provides a highly satisfactory lighting effect with no dark areas in any part of the building and at the same time allows an unbroken wall space, both on the inside of the building and from the platform side for storage. The standard width for all side platforms is 12 ft.

Since the adoption of the standard plan buildings of this type have been erected at Junction City, Kan., which has a length of 100 ft.; at Green River, Wyo., where the length is 200 ft.; at Los Angeles, Cal., where the length is 400 ft.; at Pendleton, Ore., where the length is 80 ft.; at The Dalles, Ore., where the length is 80 ft.; at Spokane, Wash., where the length is 60 ft., and at Grand Island, Neb., where the length is 160 ft. The plans place no restrictions upon the material of which the structures are built, as a result of which the materials of the new storehouses range from brick and concrete to that of the new store at Los Angeles which is of frame construction with a galvanized iron exterior. Thus building standardization has not been carried so far as to exclude such economies as might be gained from a consideration of the climate or other conditions met in each case.

Partitionless Racks Facilitate Lighting

Standard plans for all shelves, racks, counters, platforms, containers, etc., are also provided which are contained in a standard folio for convenient circulation and ready reference in making repairs or doing remodeling work, as well as in new construction. These plans show great care in detail and are devised to provide economical construction and ready repair, as well as to afford orderly arrangement in the store layout and the maximum efficiency in store operation. Thus, the standard material rack is (1), made throughout of two-inch planks; (2), with a length restricted to 16 ft., to fit standard lengths of lumber; (3), with a width of 6 ft. for the lowest tier, which in addition to providing ample space on each side of the rack for the larger materials, allows an offset of 7½ in. on each side to serve as a step when mounting the racks to reach the upper shelves; (4), with a width of 5 ft. for the second tier from the floor, which provides for a 3 ft. width of tier for the space above, also an offset of 13½ in. on each side of the rack, 3 ft. 3 in. from the floor, to serve as a counter and, in addition, a platform upon which a man can safely stand when reaching the upper shelves; (5), a total height of rack of 10 ft. so that a man standing upon this offset can easily reach into the highest shelf; (6), a height of 12 in. for the upper pockets so that standard width lumber can be used when installing additional partitions, and (7), such a construction of the rack that planks forming the working counters and steps can readily be replaced without interfering with the rest of the rack.

All Interiors Painted White

As a further step in securing uniformity and neatness a standard plan of painting is followed under which all

stores and shelves, racks, etc., are painted alike. The dominating color inside is a gloss white for the interior of shelving and walls except for the facing of all shelves and the lower five-foot of the wall area, which is gray. The counters and the low steps on all racks, on the other hand, are painted black. To reduce to a minimum the soiling of paint surfaces as well as to supplement the steps in dispensing with the use of ladders throughout the house, each rack is equipped with a hand railing of iron piping extending horizontally across the rack a few inches out from the face and a convenient distance above the floor. These are typical of the steps taken by the Union Pacific in the field of standardization. But they are only typical for nothing short of an inspection the ground is sufficient to complete the picture of the progress made in these and other directions.

Railroads Ask Higher Mail Pay

WASHINGTON, D. C.

ASSERTING that the present rates paid by the government for the transportation of United States mail are unduly low and that the cost of performing the service under the practice of the Postoffice Department has greatly increased, a committee of counsel representing the railroads of the United States has filed a petition with the Interstate Commerce Commission asking it to re-examine the rates and the service performed with a view to ordering higher rates.

The present rates were fixed by the commission by an order dated December 23, 1919, after a long examination of the statistics taken during a selected test period, after the commission had been given the duty of fixing mail pay rates by a law passed in 1916. Since that time, the petition asserts, the average loading of all units and the total weight of the mails have been so greatly increased that the rates are not fair. The present loading of storage units is twice that of the test period, upon which basis of loading the existing rates were prescribed, and the average loading of all units taken together has increased at least two-thirds. This is as was predicted by the railroads when the space basis of payment was adopted in place of the old weight basis. Having obtained new space rates based on an approximation of the tonnage carried in a given space under the old plan, the department was able to increase greatly the amount of mail carried in a given space unit without paying the railroads for the additional weight carried. It is also asserted that the roads are required to provide greatly increased trucking and handling service at the terminals. The total volume of mails transported by the railroads has almost doubled since 1917, as indicated by the fact that the postal revenues in that time have increased from \$329,726,116 in 1917 to \$572,948,778 in 1924, while the railway mail pay, adjusted to the Postoffice Department's fiscal year ending June 30, has increased only from \$74,165,246 in 1917 to \$97,298,011 in 1924.

The commission is asked to order a weighing of the mail and to require that statistics be prepared by the Postoffice Department setting forth the present weights of mail being transported in the several units.

THE SMOKE PREVENTION ASSOCIATION is to hold its nineteenth annual convention on June 17, 18, 19 and 20 at the Hotel Pantlind, Grand Rapids, Mich. One day of the convention will be devoted entirely to the subject of railway smoke prevention. John B. Irwin, a vice-president of the association, and chief smoke inspector of the Chicago & North Western, will preside on that date.

Preliminary Report on Northern Pacific Train Control

WASHINGTON, D. C.

THE Interstate Commerce Commission has made public a letter written by E. H. De Groot, Jr., director of its Bureau of Signals and Train Control Devices, to Charles Donnelly, president of the Northern Pacific, as a result of the preliminary inspection by the commission's engineers of the installation of the intermittent magnetic train-stop device of the Sprague Safety Control & Signal Corporation on the 21.5 mile, single track section between Mandan, North Dakota, and Judson, North Dakota.

As a result of this inspection the following criticisms and comments are offered:

1. A track magnet may be displaced or removed without affecting the operation of the signal system, and, under these conditions a stop-signal and an automatic brake-application would not result at the signal and magnet in the rear. While the weight and form of these magnets, and the method of fastening employed, make displacement unlikely, they are located between the track rails where they are subject to being struck by dragging parts of equipment.
2. A magnet should be provided at braking distance from the signal governing entrance to train-control territory at the west end. The yard situation at the east end apparently does not call for a similar arrangement.
3. All track magnets should be regularly inspected to insure that they are in operative condition, and after each renewal of battery, wire, or magnets, they should be inspected to insure that proper connections of the neutralizing circuits have been made.
4. It is suggested that the type of fouling protection employed at sidings be considered with a view to possibly securing increased protection.
5. The beginning and end of automatic train control territory should be plainly indicated.
6. The 200 ft. switching sections at sidings would appear to add unnecessary complications, particularly in view of the type of forestalling switch which it is proposed to employ.
7. If the oil reservoir is to be maintained separately from the brake-valve head, as now installed, it is essential that the integrity of the connecting pipe be insured, because excessive leakage might, and breakage of this pipe or its connections would result in a false clear failure at a stop indication point.
8. In one automatic application of the brakes made during the inspection, the brake pipe reduction was less than the amount intended, due possibly to overcharging. While the stop was made within the established braking distance, the cause of the lessened reduction should be determined and corrected.
9. The magnetic receiver on the locomotive must respond to track impulses at all speeds up to the maximum possible, and the equipment company has a standard of adjustment which it is essential shall be insured through maintenance either by the equipment company or by the railroad acting under instructions of the equipment company, and that this receiver shall be maintained in a sealed condition.
10. It is our understanding that the forestalling switches employed at the time of the inspection are to be replaced. None of the switches of the new type having been in evidence, no comment can here be made thereon.



Officers of the Maintenance of Equipment and Athletic Associations at Sayre System Shop and Engine House.—Top row, left to right: F. Brady, C. Carman, G. Huff, H. Allen, D. Bean, J. Ellers, G. Cooper, C. Height, F. Rosselle, J. Thompson, C. Young, G. Swartwood. Middle row, left to right: O. Ekblad, A. Palmer, E. Schoonover, W. Torpey, F. Johns, A. Birney, T. Holland (President), E. Bruffy, H. Sayres, E. Hope, E. Daly, A. Snedecker. Bottom row, left to right: E. Waltman, B. Powell, J. Kirkwood, L. Lynch, F. Thomas, B. Hall, G. Green, H. Wolcott, M. Tinklepaugh.

Co-operation—A Constructive Force

Lehigh Valley maintains intimate contacts between the officers and employees

By Roy V. Wright

Managing Editor, *Railway Age*

FOUR representatives of the Lehigh Valley Railroad took part in the competition on co-operation which the *Railway Age* held about a year ago. One of these, W. C. Barrett, trainmaster at Sayre, was awarded the second prize; his article was published in the *Railway Age* of July 12, 1924, page 51. It is of more than passing interest that the other three Lehigh Valley representatives who participated in the competition were all "supervisors of employment"—a rather unusual title on a railroad. Has it any significance?

Like other railroads, the Lehigh Valley passed through a most distressing experience during the strike of the shop crafts in 1922. Today it is characterized in all departments, and particularly among the shop forces, by an unusual spirit of co-operation and teamwork. This not only measures a more contented spirit on the part of the employees, but results in a higher grade of service to the public. It also undoubtedly is one of the factors responsible for the better financial showing of the road in the past year or two, as indicated by the data in the accompanying tables.

Authorities appear to be agreed upon the fact that the spirit which dominates an organization is inspired from the very top and that ways and means must be established to close the gap that has grown between the officers and the men in the ranks.

President Loomis of the Lehigh Valley is deeply interested in the welfare of all of the employees—his co-workers, as he calls them. This is demonstrated in many ways, some of which will be pointed out in this article. Simple and effective methods have been established whereby the president is at all times in close touch with all of the employees. He believes in maintaining intimate contacts between the officers and the men. A railroad 1,400 miles long and with close to 22,000 em-

ployees is not a large one when compared with some systems, but even on a road of this size special methods must be used to bring about and insure the maintenance of cordial relations with the employees.

Personnel Representatives

A few months after the railroads were returned to their owners by the government—December, 1920, to be exact—President Loomis came to the conclusion that more care should be given to the selection of new employees and in preparing them for and installing them in their new jobs. Moreover, these men should be followed up and a system of service records developed for each man in the organization. There are seven operating divisions on the Lehigh Valley and one man was selected from each of these divisions to report to the division superintendent and devote all of his time to the personnel question on the division. These men are given the title of supervisors of employment and before they started to work were called to New York for a conference with the president, in order that they might understand thoroughly just what he had in mind.

It must be clearly understood that these men do not actually hire or discharge employees. They do get into close personal touch with prospective employees, size them up carefully and look into their previous records. If they are satisfied that a man will make a satisfactory employee they refer him to the proper officer or foreman when a vacancy occurs for which he is fitted. In some instances a foreman or officer may have in mind someone who he thinks would make a good employee. In such cases the applicant is referred to the supervisor of employment, is thoroughly examined by him, and unless found satisfactory, cannot be employed.

When a man has been employed, the supervisor of em-

ployment acquaints him with the rules of the organization and facts about the railroad. He is introduced to the men with whom he is to work and is clearly informed as to his relations to them, and as to what will be required of him. Everything possible is done to make him feel at home in his new surroundings. The employment supervisors also follow up the men after they have entered the service. Sometimes employees will talk to the employment supervisors about things that they hesitate to take up with their immediate superiors and because of this the supervisors are in a position to prevent needless misunderstandings.

QUALIFICATIONS OF PERSONNEL REPRESENTATIVES

Before considering the other duties of the personnel representatives, it might be well to say something as to their qualifications for these positions. It was recognized from the very start that these men should be selected for their ability to understand human nature and to deal tactfully not only with the men in the ranks, but with the various foremen and officers with whom they must come in contact. Moreover, since acquaintanceship counts for much in positions of this kind, an effort was made to secure men who would recognize the great possibilities in the position and plan to make it their life work. It is interesting to know that one of these men was a telegrapher, another came up through the mechanical department and had served as engineer of tests and superintendent of apprentices; another was a yardmaster, another a trainmaster, another a supervisor of agents, another an assistant chief clerk in the superintendent's office, and another, superintendent of the Lake line before it was divorced from the railroad. It will be noted that no two of the men have had exactly the same training and that the combination of all of them covers most of the important departments in the service.

WHAT THEY DO

This group has its own chairman and meets regularly once a month for an all-day conference. Each supervisor makes a written report weekly to his superintendent. These reports include data as to the applicants which have been examined, the positions which have been filled, the men who have left the service with the reasons for leaving, employment conditions in the local industries, and other special work upon which the supervisor may have been engaged and which will be of interest to the superintendent.

The monthly meetings include a wide variety of reports and discussions. The weekly reports of the supervisors are interchanged and part of each monthly meeting is

given over to a discussion of these reports. The service records are being carefully revised and brought up to date, with special reference to employees who have been in the service five years or less; progress reports are made on this work. The dismissals for the month are reviewed and analyzed, with a view to removing the causes and reducing the turnover. A survey is made of the applications in hand; incidentally, a review of these over a considerable period indicates that there is no shortage of applicants and that the advantages of service on the Lehigh Valley seem to make a strong appeal. Questions concerning safety are considered and special attention is given to discussing ways and means of securing the co-operation of workers in improving the relations of the railways with the public.

One responsibility of the supervisors of employment is to visit those who are sick or injured, or to inspire others so to do. In many cases assistance of various sorts is extended to those who are especially in need of help. The supervisors of employment also encourage the men to influence their friends to travel or ship goods over the Lehigh; this in order to maintain a steady business and insure more stable or regular employment. Men who are dropped out of service because of a falling off in the work are, if they so request, transferred to temporary positions in other departments if such positions are open.

A continuous educational program is carried on with the uniformed men to insure that their appearance and action in uniform is a credit to the railroad. Wherever possible foremen are encouraged to give more attention to improving themselves in the art of leadership. Every foreman has been furnished with a copy of "Spark Plugs" by Sherman Rogers, and they are encouraged to reread this book at inter-

vals. Questions relating to the prevention of loss and damage to freight, conservation of material, and things of that sort are regularly discussed at the monthly meetings of the supervisors of employment, in order to determine how they may be helpful in securing better results.

OPEN FORUM DISCUSSIONS

Another feature of the monthly meetings is the addresses by officers on topics of mutual interest and the presentation of special papers by the supervisors of employment on subjects relating to management and personnel administration. A subjects committee also presents two or three topics for open forum discussion. Typical discussions of this sort at one of the monthly meetings included the Brown system of discipline and the extent to which train service is affected by men who are off duty on account of sickness. Frequently some special article

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which may have appeared in one of the technical magazines, or an address before a railroad club or other organization or technical society is discussed.

VALUE OF SUPERVISORS OF EMPLOYMENT

In general, the work of the supervisors of employment may be summed up by saying that these men are responsible for the careful selection, placement and development of the new employees. This reduces the turnover and the resulting expense, cuts down the number of mistakes and the amount of damaged work, reduces the number of injuries caused by inexperienced men and gives the employees a greater sense of security. The desire of the management is that the workers be satisfied. As President Loomis expressed it in talking about the handling of grievances: "Our policy is to be on the alert for grievances, to correct them and not to evade any

local committeemen elect their own division or general shop chairman.

A general system chairman representing all maintenance-of-equipment forces is elected for a term of two years by the local chairmen of all crafts; general system craft chairmen of each craft are elected for a term of two years by the local chairmen of each craft. The general committee is composed of the general chairman and the general craft chairmen.

All grievances must be acknowledged and disposed of by a general foreman in seven days and by a master mechanic or shop superintendent in 10 days. Questions which cannot be settled by the local committees and the local officers are referred to the general committee for decision. If for any reason the general committee cannot come to an agreement with the superintendent of motive power, the question is referred to a joint board, consist-

COMPARISON OF TRAFFIC

	All revenue freight carried—tons			Manufactures and miscellaneous—tons		
	1924	1920	Per cent of increase or decrease	1924	1920	Per cent of increase or decrease
All roads	2,171,777,301	2,259,983,278	-4	500,290,118	494,556,078	+1
Eastern district	1,146,954,555	1,253,468,027	-8	301,897,270	299,784,852	+1/2
Lehigh Valley	30,224,907	32,103,897	-6	7,939,721	6,541,005	+21

Lehigh Valley increase is primarily in item { 1920 1,731,222 5.39% of all revenue tonnage.
"Other manufactures and miscellaneous." { 1924 3,401,830 11.26% of all revenue tonnage.

responsibility in this direction." This is vital if the men are to remain contented. If contented, they will go at their work more cheerfully, resulting in more efficient performance and a higher quality of output.

One of the superintendents when asked about the value of the supervisors of employment stated emphatically: "I don't know how in the world we ever got along without them." The supervisors of employment have also been characterized as "the fingers of the chief executive on the pulse of the organization."

Employee Representation

About 25 per cent of the employees of the road, or 30 per cent of all operating department employees, are in the shop crafts. In 1922 the shop crafts employees formed "The Association of Maintenance of Equipment Employees of the Lehigh Valley Railroad." This includes all

ing of the general committee, with an equal number of representatives appointed by the management. It is significant that although this type of organization has been in effect more than two years, no controversial question has yet been referred to the joint board.

The clerks and maintenance-of-way employees have similar associations. The change in attitude of the shop crafts employees toward the management since June, 1922, is little less than remarkable. Grievances are quickly adjusted. Constructive suggestions are being made by the men and they are uniting with the management in trying to improve the condition and the prosperity of the road.

SHOP CRAFTS ACTIVITIES AT SAYRE

Closely associated with the organization of the maintenance-of-equipment employees at the principal shops at

Unit	1920	1921	1922	1923	1924
Average miles of road operated	1,448	1,449	1,449	1,373	1,374
Revenue tons carried—total	32,103,897	26,377,743	23,071,515	31,164,643	30,224,907
Manufactures and misc.—tons	6,541,005	4,719,981	5,792,942	7,369,197	7,939,721
Revenue tons carried one mile	{ Coal 2,638,247,537	2,345,211,238	1,415,578,323	2,482,541,982	2,083,381,242
	{ Mds 3,689,265,536	2,768,079,906	3,042,517,496	3,233,942,404	3,646,575,095
Average distance moved—miles	197	194	193	183	190
Revenue per ton per mile—cents	0.971	1.220	1.135	1.104	1.109
Average revenue train load—tons	864	767	742	819	794
Average load per loaded car—tons	32.21	29.19	27.48	29.89	27.85
Total operating revenues	\$75,229,584	\$74,997,799	\$62,418,889	\$75,935,154	\$76,374,805
Total operating expenses	80,503,975	67,238,068	59,023,940	66,754,214	60,967,969
Net operating revenues	Def. 5,274,391	7,759,731	3,394,949	9,180,939	15,406,837
Operating ratio	107	90	95	88	80
Net railway operating income	Def. 7,019,729	5,842,520	590,084	6,573,120	11,391,549

of the gang leaders, mechanics, helpers, apprentices, etc., but not the supervisors. A local committee (division or general shop) is formed at each operating point or general shop by electing representatives from each craft on the basis of one committeeman for the first 49 members, two for 50 to 200, three for 201 to 300, etc. Candidates for these positions are nominated on the first Monday in May and an election by secret ballot is held on the third Monday of that month. Nominations are made by petition, which must be signed by 25 voters or 25 per cent of the voters in the craft in the election district. The

Sayre, Pa., is the Shop Crafts Athletic Association, and also the Ladies Auxiliary of these combined associations.

In the very midst of the shop plant is a meeting place for the employees' organizations, known as Assembly Hall.

Probably there is nothing like it on any other railroad. The shop crafts organization wanted to have a meeting place; it seemed desirable to have it on company property convenient to the various departments. The old cab and tank shop, which had been used for emergency purposes during the strike and is centrally located was

available, but it was hardly adapted for a social center or meeting hall. President Loomis indicated that this building would be placed at the disposal of the employees and that material would be furnished for remodeling it and putting it into good shape, if the men would do the work on their own time.

The men went at the task with enthusiasm and energy and were supported by the Ladies Auxiliary, which had a large part in arranging for the decorations and the finishing touches, and giving the whole building a cozy and homelike appearance. It is 175 ft. long and 75 ft. wide and is divided into two parts, one a combination auditorium and dancing hall, and the other a cafeteria and game room in which a bowling alley is now being installed. A splendid maple floor was built over the old

to the extent of wrestling and boxing, are put on occasionally. The charity ball, held under the auspices of the Maintenance of Equipment Association, netted \$1,200 clear for the Robert Packer Hospital at Sayre. A Christmas entertainment was furnished for the children of the community and the association also took care of a number of needy families.

At various places on the walls of the auditorium are photographs of the officers of the association and of the Ladies Auxiliary, of the band and the orchestra, but there is one set of photographs which is highly prized, the like of which will probably not be found in any other shop plant. It includes individual photographs of the members of the board of directors and officers of the road. These photographs mean something. The directors, on their



Officers of the Ladies Auxiliary of the Maintenance of Equipment and Athletic Associations at Sayre

Standing, first row, left to right: Mrs. E. Bruffy, Mrs. B. Powell, Mrs. J. Childs, Mrs. H. Lutz, Mrs. F. Tucker, Mrs. H. Deitrich.
Second row, left to right: Mrs. F. Johns, Mrs. J. P. Laux, Mrs. Thomas Holland (President), Mrs. M. Jefferson, Mrs. J. Ellers.
Third row, left to right: Mrs. C. Gillis, Mrs. H. Royal, Mrs. A. Birney.

concrete floor—a joy for dancers. The roof girders are concealed by tastefully arranged bunting. A stage, with the necessary dressing rooms, has been placed at one end of the hall, the employees purchasing the necessary scenery and properties. The walls were decorated and the windows have been tastefully draped with curtains.

To some extent this hall is the social center of the city—dances are held every week and vaudeville shows and other entertainments are put on by the employees and their families at more or less regular intervals. The amount of high grade local talent available is really surprising. An orchestra and band furnish music and are so well organized and proficient that they occasionally schedule programs of their own. Athletic events, at least

annual inspection trip, spent an evening at Sayre and were entertained by the Athletic Association. It is said that there were almost 1,800 people present. The thing that hit home with the employees, however, was that the directors did not get up and disappear after the vaudeville entertainment, but stayed for the dance and had a splendid time getting acquainted with the employees. Men like George F. Baker, who are caricatured by some of the labor union magazines as Wall Street magnates, were found to be real human beings, enjoying the same things as the shop crafts employees and tremendously interested in the good time that they were having. One must speak of the directors with respect in talking with the shop craft employees at Sayre. They have met them and know

that they are red blooded human beings, much like the rest of us.

The Ladies Auxiliary has 1,132 members and not only has been intensely interested in helping to improve the Assembly Hall and develop a fine social spirit, but has been influential in boosting the railroad and in soliciting business for it.

The shop crafts employees do not pay dues to the Maintenance of Equipment Association, but do pay 25 cents a month to the Athletic Association. The dues, supplemented by the proceeds from special entertainments,

and happy in their work. The entire effect of this may be nullified for a given gang or department if the foreman or supervisor does not understand how to lead the men under his direction—and this may be true even though the foreman himself may have the best of intentions.

Modern industry and transportation have developed rapidly and until recently comparatively little serious attention has been given to the art of management of organizations in these fields. We are beginning to recognize, however, that it is more important for a foreman or supervisor, who comes in direct contact with the



Sayre System Shop Band

are used to maintain the Assembly Hall and for charitable and other purposes.

The band, as well as the orchestra and a shop quartette, are very much in demand in Sayre and nearby communities. Last summer the band offered to put on a program free of charge for any of the churches in Sayre which might desire to use this form of entertainment in raising funds. All of the churches took advantage of the offer and as a result there has developed a splendid spirit of understanding and co-operation between the shop employees and the community as a whole.

The social activities of the shop crafts at Sayre are being duplicated to some extent at Easton, Ashmore, Buffalo and other points. The management is glad to co-operate to the fullest extent wherever the men show a sufficient interest to promote such activities.

THE CAFETERIA

A few of the shop employees at Sayre can go home for lunch at noon. Most of them, however, carried lunches. Some of them wanted a hot meal and so a cafeteria has been established in the Assembly Hall by the Athletic Association on a co-operative basis to furnish meals at or near cost. The Ladies Auxiliary was given general supervision and Mrs. Thomas Holland, its chairman, was asked to take direct charge. A manager was then hired and the cafeteria is now serving about 250 meals each noon. Any of the men are welcome to bring their lunch boxes into the dining hall and, if they so desire, can purchase hot coffee or supplement their lunch in other ways.

Another interesting development has been 10-minute educational and inspirational talks in the dining hall during the lunch hour. Various officers and others are invited to give these talks, most of them relating to the railroad and its operation or to matters of special interest to the employees.

Foreman Training

A management may have the very best of intentions in dealing with its employees; it may have gone to great trouble and expense in improving the conditions under which they work and in trying to make them comfortable

workers, to understand how to develop and lead men than it is for him to understand the technical details of the job, important as that may be.

The Lehigh Valley has tackled this problem somewhat differently from other roads and, at least in the mechanical department at Sayre, is going at the task in a methodical and most effective manner. One of the mechanical department officers who was impressed by the importance of helping the foremen to become more efficient and effective, discovered that the Pennsylvania State College had devised a special course in foreman training in its Department of Engineering Extension. This course was carefully worked up by the college and checked up by conferences with men from the industries throughout the state. It seemed to be fairly suitable for use on the railroads, although primarily intended for manufacturing industries. A large room adjacent to the enginehouse was fitted up in such a way that it could be used as a combination social center for the foremen and employees at lunch and at odd times, and also as a schoolroom. A group of 26 foremen, gang leaders and some of the leading workers enrolled in the course which cost the men \$15 apiece and includes 12 lesson units or parts. The men first study a unit, an officer or some member of the class then makes an address on the subject; this is followed by an open forum discussion of the topic and its application to the particular conditions which pertain in a railroad enginehouse or shop. The material in each of the study units is such that it is necessary to devote two or more class sessions to it. The members of the class finally prepare the answers to certain questions and these are sent to the Pennsylvania State College for correction and grading. An occasional lecture is furnished by an expert from the college. The class meetings are held for an hour-and-a-half period once a week.

The experiment worked out to such splendid advantage in the enginehouse that the foremen in the system shops at Sayre as well as a number of supervisory officers decided to form classes. These meet in the apprentice schoolroom and are in charge of the apprentice instructor. They include 51 foremen, gang leaders, etc. Foremen at Easton have a similar organization and are now taking the same courses.

The first unit of the course is devoted to the responsibilities of the foremen. These are considered in a general way and include a discussion of the characteristics of a successful foreman. The second unit considers aids in production and includes a consideration of those things which have both a direct and indirect influence on production. The third unit discusses costs and their relation to the foreman. The fourth, the foreman's relation to employment; among other things it considers the selection and following up of the worker, a discussion of the cost of turnover, methods for reducing it, etc. The fifth unit is devoted largely to a consideration of safety and the foreman's relation to it. The units following this include other important phases of the problem of leadership and production and also a brief review of the history of industry.

The group which started in the enginehouse completed its course some time ago. The class, however, is continuing to meet and is basing its studies upon articles which appear in technical magazines. About 40 of the workmen in this department have also been inspired to take up individual correspondence courses on various subjects, largely technical. The foremanship courses in the system shops at Sayre are about half completed.

The results have been striking. The whole attitude of some of the foremen toward their jobs has been changed, so much so that the men notice the change and react favorably to it. This is only what is to be expected, based on the results which have followed intensive foremanship training courses in industry.

This better understanding on the part of the foremen of the way in which to lead their men and of their relations with their fellows and to the management, naturally is a great help in developing and maintaining the right sort of contacts between the men and the higher officers. It not only results in better understandings all around, but keeps open the channels which make it possible for

the employees every week and that outlines of these interviews must be reported each week. These reports go to the general manager and are transmitted through regular channels to the president; each superintendent also receives copies of the reports made by the other superintendents so that they may know just what subjects they are discussing. Needless to say, this development has been a large factor in getting the employees to feel that their superiors are really interested in them as individuals; this in turn is bound to increase their self-respect and their interest in the organization.

These interviews may take any one of several forms. The superintendent, for instance, may have some special matter on his mind and wish to see several men from a given group in a particular week. Or, on the other hand, he may prefer to talk in a given week with men from several of the departments.

A survey of a large number of the weekly letters containing reports of these interviews indicates a great variety of approaches to the men. For one thing, it gives the superintendent an opportunity to inform the men as to the conditions of the property and the special problems before the management. One superintendent does all the interviewing in his own office in order that he may refer to a set of graphs or charts, as well as other statistical data, which are maintained up-to-date and disclose the tendencies in the operating department.

The men are encouraged to make suggestions and to express themselves frankly. Misunderstandings, if there are such, can thus readily be adjusted and causes, or fancied causes, for grievances can be removed. Then, too, these interviews offer an opportunity to thank and congratulate those who have rendered especially good service. There were many opportunities for such compliments recently because of exceptional service which was rendered by the men during the heavy snow storms last winter and the high water in February. Incidentally,



Sayre System Shop Orchestra

the management to be more responsive to the needs of the men; it also keeps the men better posted as to the problems of management and the condition of the property.

Superintendents Interview Men

The supervisors of employment, employee representation and foreman training all tend to develop closer contacts and better understandings between the officers and the men. President Loomis has taken still another means of insuring that the officers will keep in close personal touch with the men. A rule was established several years ago that every superintendent must interview some of

appreciation for such service is also acknowledged by means of letters. It is not all "Please explain" on the Lehigh Valley; the value and importance of recognizing good service is appreciated.

The interviews furnish an opportunity also to discuss such matters as safety first, fuel conservation, prevention of loss and damage to freight, solicitation of business, etc. Not only can the men be inspired to take a greater interest in these matters, but they are often in a position, because of their detail knowledge of operation, to make extremely helpful suggestions. It must be understood that the management assumes full responsibility for seeing that the men are informed as to exactly how to do their work.

In case of a wrong or harmful practice on the part of an employee, the management assumes that it is to blame unless it has specifically instructed the employee to do otherwise. Understanding this the men feel more free to call attention to some things which might otherwise not be developed.

From what has been said, some idea may be gained of the possibilities of these interviews. There is also the opportunity of coaching the men as to how they may develop and fit themselves for larger responsibilities. On the other hand, the careless or indifferent men may be warned in a friendly way. An example of this was found in the report from one of the superintendents which contained this sentence: "The last mentioned has been slipping somewhat of late in his work and conduct; I have talked to him as to the proper lines to follow and I believe I have straightened him out in that direction." (Names of individuals interviewed are not reported. They are referred to by the title of their positions).

These are only suggestive of some of the outstanding things that are developed in these interviews. The big thing is that they help to brighten up and maintain that intimate contact between the top and bottom of the organization which is so necessary and vital in these days of large and complicated organizations; incidentally also they have had a splendid moral effect upon other supervisory officers.

Dealing with the Public

The relations of a railroad to the public and its relations to its employees are closely interwoven. The employees in some cases form a considerable part of communities which are served by the railroad. In educating the community as to the facts about the railroad it will at the same time reach the employees. On the other hand, the employees, if they are keenly interested in the railroad's welfare, can be an important factor in "selling" the railroad to the community. It is interesting to note how these two things dovetail on the Lehigh Valley.

In the first place, the Lehigh Valley does not handle its publicity work at long distance. The division superintendents are charged with the full responsibility of dealing with public relations in their territory. They are the big men in their districts and news and facts about the railroad are given out to the press and the community through them. This means that these officers must be kept fully and promptly advised and informed as to the railroad situation and the road's problems.

The superintendents and other officers are also encouraged to join local Chambers of Commerce, Rotary, Kiwanis, Lions clubs, etc. Their dues are paid in these organizations and they are expected to take an active part in their work.

Some of the general officers can also be helpful in getting information over to the public through their local representatives. The general counsel, for instance, is in close touch with the local lawyers, the chief surgeon with the doctors, and the treasurer with the banks.

There is quite another side to the question of dealing with the public on the Lehigh Valley and educating it to the needs of the railroad and the service given by it. The employees, of their own volition, are taking a hand in the matter. Reference has already been made to the fact that the Ladies Auxiliary of the shop crafts organization at Sayre has been active in boosting the road and soliciting business for it. This is true of many of the different groups of employees from one end of the road to the other. In most cases they get out their own publicity material, the company paying for the printing, thus getting away from cut-and-dried publicity. A fair example of this is a pamphlet entitled, "Steady Employ-

ment on the Lehigh Valley," which was recently distributed by the Maintenance of Equipment Association and Athletic Association at the Sayre shops. It reads as follows:

To Fellow Employees:

The first step in our campaign to keep L. V. R. R. employees steadily at work was a letter to all shippers and receivers of goods in this vicinity, urging them to use L. V. R. R. lines as much as possible in all their movements of freight.

The next step is squarely up to every man employed by the L. V. R. R. for "The Lord helps those that help themselves." You can be of great assistance in keeping yourself and fellow employees at work if you will earnestly strive to carry out the following suggestions:

1. Be loyal to the Lehigh Valley, not only in your work, but by telling of its unexcelled service and advantages to all travelers and shippers whom you meet.
2. Buy your coal, food and merchandise from those who ship and receive freight over the Lehigh Valley.
3. Urge your friends to patronize the merchants and business men who ship via Lehigh Valley.
4. Tell your merchants that over one-half of the freight charges they pay are paid out in wages and so benefit them.
5. Be saving in your work and time. Efficient labor and careful use of material means more money for the company to spend on the great amount of work always waiting to be done.

Your co-operation in carrying out these suggestions will insure steady employment and prosperous conditions for all.

The result of these activities on the part of the management and the employees has borne much fruit in developing a more cordial spirit between the public and the Lehigh Valley—it could not do otherwise—and it has had a splendid reaction upon the relations of the employees with the management.

Other Factors Which Induce Co-operation

An attempt has been made thus far in this article to point out some of the things which the Lehigh Valley has been doing to induce a more cordial and intelligent spirit of co-operation, and which stand out because they differ more or less from the practices of other railroads. There are several other factors involved that are helpful, but which are practiced in some degree at least on other railroads. Space will permit the consideration of only a few of these.

DIGNIFYING POSITION OF AGENTS

Too often the agents, who are important men and in many cases are the ranking railroad officers in the communities, are neglected by the higher officers. To dignify the position of the agents and fit them to represent the railroad in a large way in their districts, the superintendents regularly meet with them. Officers of various departments are present at these meetings to discuss such questions as loss and damage, accounting, traffic and general operating subjects.

GROUP LIFE INSURANCE

A request was made several years ago by some of the employees for a cheap form of life and accident insurance. After very thorough investigation the management effected an arrangement whereby the employees were divided into different groups and were offered group insurance at a moderate rate, provided a sufficient number would agree to subscribe to such insurance. Of the 22,000 employees, approximately 15,000 have taken advantage of this offer to secure life and accident insurance at especially low cost, deductions being made from the pay roll. The insurance is offered to the various classifications in varying sums ranging from \$1,000 life and \$1,000 accident insurance for laborers to \$5,000 life and \$5,000 accident insurance for the supervisory forces.

SELLING STOCK TO THE EMPLOYEES

The Lehigh Valley a few years ago offered to help its employees buy stock by purchasing it on the open market and allowing them to pay for it in instalments. A large number of the employees took advantage of this offer. There is some question as to how many of them still hold the stock, because it has greatly increased in value and many of them have probably disposed of it, taking advantage of the increase in value and using the money for other purposes. Even though they may not have held the stock, it is believed that the fact that they profited considerably by the bargain, has made them feel a greater interest in the welfare of the property.

MEETINGS AND CAMPAIGNS

The management of the Lehigh Valley believes in frequent meetings of all classes of employees, not only because of the educational value of these meetings, but because it gets the different men in the same department or different departments better acquainted, and because of the inspiration coming from these conferences. While such meetings are usually largely of a technical nature, the social features are not overlooked at most of them. Meetings of this kind naturally develop campaigns of various sorts. Just now, for instance, there is a "no accident" campaign on for three months, beginning April 1. Then, too, the system as a whole has a slogan for 1925, "80 million gross, 20 million net."

In addition to the division safety and fuel conservation committees which meet regularly every month, each division also has an efficiency committee which holds monthly conferences. This committee has as its chairman the division superintendent; the other members are the trainmaster, chief dispatcher, division engineer, master mechanic, a yardmaster, road foreman of engines, traveling fireman, supervisory agent, supervisor of bridges and buildings, supervisor of signals and track, supervisor of employment and division storekeeper.

VETERANS' ASSOCIATION

The Lehigh Valley has a thriving veterans' association with 2,766 members, which has been in existence about five years. Twenty years aggregate service is a requirement for membership. The veterans hold regular meetings, both local and system, largely of a social nature. The organization has been helpful in developing a strong family spirit on the Lehigh Valley. Its members are distinguished by a suitable button. There is an initiation fee of \$2.50, with annual dues of \$1.00, except for the pensioners, who pay 50 cents a year. The company, of course, furnishes transportation for attendance at the meetings. The association has become very much interested in the solicitation of business. A couple of years ago the Veterans' Association having funds in its treasury to invest decided that it could do nothing better than buy Lehigh Valley stock. This it purchased in the open market; the investment of \$4,000 now shows a profit of \$3,000.

WELFARE ASSOCIATION

There is a welfare association in the mechanical department at several points; a typical instance is the association at the enginehouse at Sayre. The men have a small co-operative sales counter of a few popular or necessary articles; the profits are used for charitable purposes. This obviates the necessity of taking up collections for those who have met with misfortune. At some of the points where there is no athletic association, the welfare association has extended its activities to include social and athletic events.

ASSIGNMENT AND CONDITION OF POWER

A special effort is made on the Lehigh Valley to keep the locomotives clean and in the best possible condition. This even extends to the polishing of the cylinder heads and number plates of the locomotive, and tends to encourage the engine crew to take a greater interest in the locomotive. In addition to this the power is assigned. This does not mean, however, that the locomotive is assigned to a single crew, a thing that would be quite difficult or impossible in these days of long locomotive runs and larger locomotive utilization. In round service, doing extra work, locomotives are single crewed; in symbol or on scheduled turn-around runs, locomotives are double crewed; on long symbol and passenger runs they are triple crewed. All crews, however, have the same locomotive every trip. In addition to this all mechanics at Sayre are assigned to work on particular engines, so that the work on a given locomotive is always done by the same set of men. This is claimed to be a large factor in maintaining the power in the best possible condition and at a minimum cost.

A Chat with the President

The policy of President Loomis is apparent to a large extent from what has already been said. His ideas as to discipline and such things as the selection and promotion of foremen and officers, however, may well be commented on in closing.

The president believes in strict discipline, but always square and fair. This does not mean that an officer cannot unbend and meet the men on a friendly basis. The men have a greater respect for the man who is strict in his discipline. Given such a man with heart qualities, who will visit the men in time of illness and otherwise show that he has their welfare in mind, and the combination cannot be beaten.

The president is strongly of the belief that the supervisors should be selected primarily from the standpoint of their ability to lead the men. Comparing a man who understands how to lead men, but who does not have a thorough knowledge of the technique of the business, with the highly trained technical man with poor leadership ability, and the balance sheet will register in favor of the former. It is, of course, better to have the leader strong in both respects, but this is not always possible. President Loomis has been more than ordinarily successful in selecting men with leadership qualities. This is undoubtedly the reason he has been entrusted with building up a number of properties which were suffering because of the wrong sort of management.

It is significant also that in changing from one company to another Mr. Loomis has never taken men with him. He has always tried to make use of the men who were on the job when he went with a new company. More than this, he has always aimed to get the officers of the various departments to approach their tasks from the standpoint of the organization as a whole, rather than from that of their particular department. The story is told of his experience with a mining company which he had been asked to take charge of and put on its feet. The first month he was with the new company most of his time was spent in listening to the complaints of one department against another. Finally he called the heads of all the departments together, told them frankly that they were working for the same company and that they would either have to work together or present their resignations as they left the room, commenting that he could run the company without any of them and obtain better results than would be possible with a quarrelling organization. The atmosphere was quickly cleared and

instead of complaining against one another, the various departments united, and a fine spirit of teamwork was developed in working in a common cause and for the same objective.

The Lehigh Valley has profited under such leadership. Today the men are very much with the management in trying to improve the service and the prosperity of the road. The newspapers are almost universally friendly from one end of the road to the other—a thing that was not always true. The friendly feeling of the men extends beyond the officers and includes the board of directors, as a whole and as individuals. The communities along the road are interested in the welfare of the Lehigh Valley and are doing their part in boosting it.

If the president has a motto, it might be incorporated in the expression, "Mingle with the men." Undoubtedly this has been a large factor in bringing about the friendly feeling which exists, not only between the management and the employees, but also with the public which is served by the railroad.

Railways Minister Opposes C. P. R.-C. N. R. Merger

IN his annual speech on the position of the Canadian National George P. Graham, Minister of Railways and Canals, in the House of Commons at Ottawa last week opposed the suggestion of an amalgamation of the Canadian Pacific and Canadian National and said he preferred to first see the results of closer co-operation between the two roads in the matter of elimination of duplication of services and in effecting other economies. He replied to the criticisms coming from London, Eng., that the original investors in the Grand Trunk and the Grand Trunk Pacific were being deprived of a return on their investment by the present Dominion government by telling them that had it not been for the policy adopted by the Meighen government and by the present King government the English investors would have been in a much worse position. Arthur Meighen, Conservative leader in the House, urged greater economy on the part of the Canadian National management.

Mr. Graham in the early part of his speech made reference to a comparison of operation of Canadian and American railroads as follows:

The United States railways are often compared to ours. I am quite prepared to accept the challenge on behalf of the Canadian railways, including the two great systems, and compare the service they provide with the service provided by any railway company in the United States. It is true that during the war the railway service in the United States was confused, and the endeavor that was made to amalgamate a lot of lines without any real connecting links under a government head only made confusion worse founded. During the war the Canadian railways gave a service infinitely superior to the service given by the United States.

I want to interject another remark here concerning the Canadian railways and the American railways. I am not saying that the railways across the lines are not well managed, though they are no better managed than ours, but they do get higher freight rates than we do in the Dominion of Canada. And when any person talks of going over to the other side of the line to better his condition or of being attached to that country, if he went there the first crack would be about a 30-per cent addition to his freight rates. So far as transportation is concerned, we in Canada are served too well for our population.

Answering some criticisms of expenditure on the United States lines of the C. N. R. Mr. Graham said:

Now take our United States Lines. Hon. gentlemen have spoken in this House—and I am not criticizing them at all—of the expenditure on our United States lines and the service given by them, and some of them have asked that this service be discontinued. Let me point this out to hon. gentlemen: We have

several thousand miles of railway in the United States. I pointed out a few moments ago that the duty of service to the community through which a railway runs rests on the railway, because they usually get some compensation for that. A railway company cannot, unless there be good reasons, rob any community of a reasonable service and when hon. gentlemen opposite tell us that we ought to take up the rails on certain parts of our United States lines, let me point out that these United States lines are under the control of the Interstate Commerce Commission and of various laws and statutes of the United States, and this parliament itself would not have the power to interfere with a reasonable service on those lines or to take up one foot of rail unless the consent of the Interstate Commerce Commission was given. In Canada our own commission regulates these matters largely, but in the United States the Canadian National lines are subject to the Interstate Commerce Commission, and must be so; it would not be right if it were anything else.

Mr. MACLEAN (York): But you could sell them outright.

Mr. GRAHAM: You can sell the stock in them of course. Just to show you how delicate some of these things are, recently in a certain legislature in one of the states it was charged against the Canadian National that it was spending all the money in Canada, and not spending in the United States the money to which the United States was entitled on account of the mileage here. Of course, there is not any foundation for that statement, but that question was raised, and I heard that without any criticism that legislature, in both Houses, passed an act to take over without the consent of the Canadian National or of the Canadian government a certain mileage of the Canadian National Railway, which it is stated that state intends to sell to another company. I do not know whether that is so or not, but I am citing that as a matter of public record just to show the delicate questions that sometimes arise in connection with the operation of the Canadian National lines in the United States. I want to add this, that on the whole every state in the Union, and the federal government of the United States as well, has given the Canadian National System fair play, and given it just as good an opportunity as if it was one of their own lines.

On the question of co-operation between the two Canadian systems Mr. Graham said:

The question of co-operation has been discussed between the heads of the railway companies and myself and other members of the government many times. It is not so easy of accomplishment, as it may appear. Co-operation in the eliminating of certain passenger trains would not be difficult, although the president of the Canadian Pacific put this question to me just a few days ago: "You say we are running a lot of trains between here and Montreal. So we are, but I tell you these trains pay. Why should I be asked by you or by the government or by parliament to take off a train that is helping to pay dividends to my shareholders? Is that fair to the shareholders?" That is a matter that has to be considered, because, to my mind, we must not do anything, in either amalgamation or forced co-operation, that is going to frighten capital invested in the Dominion of Canada.

In closing he announced a reduction of \$17,500,000 in the estimated government expenditures on the Canadian National which the present session of Parliament would be asked to sanction.



P. & A.

President Gray of the Union Pacific Surrounded by Festive Residents of Boise, Who Celebrate the Opening of the New U. P. Line into Their City

North Western Reports Poor Earnings

*Results typical of situation in entire northwestern region—
Low rate level blamed*

THE Chicago & North Western reported a net income after charges in 1924 of \$7,671,324. This compared with \$8,737,468 in 1923 and was, with the exception of 1921—in which year there was a deficit after charges—the lowest net income reported for about 20 years. The North Western now pays 7 per cent dividends on its preferred stock and 4 per cent on its common. It formerly paid 8 per cent on the preferred and 7 per cent on the common. The dividends paid in 1924 were the same as those paid in 1923. In 1923, the dividends were earned with a margin of \$1,363,718. In 1924, the balance of income after dividends was only \$297,574.

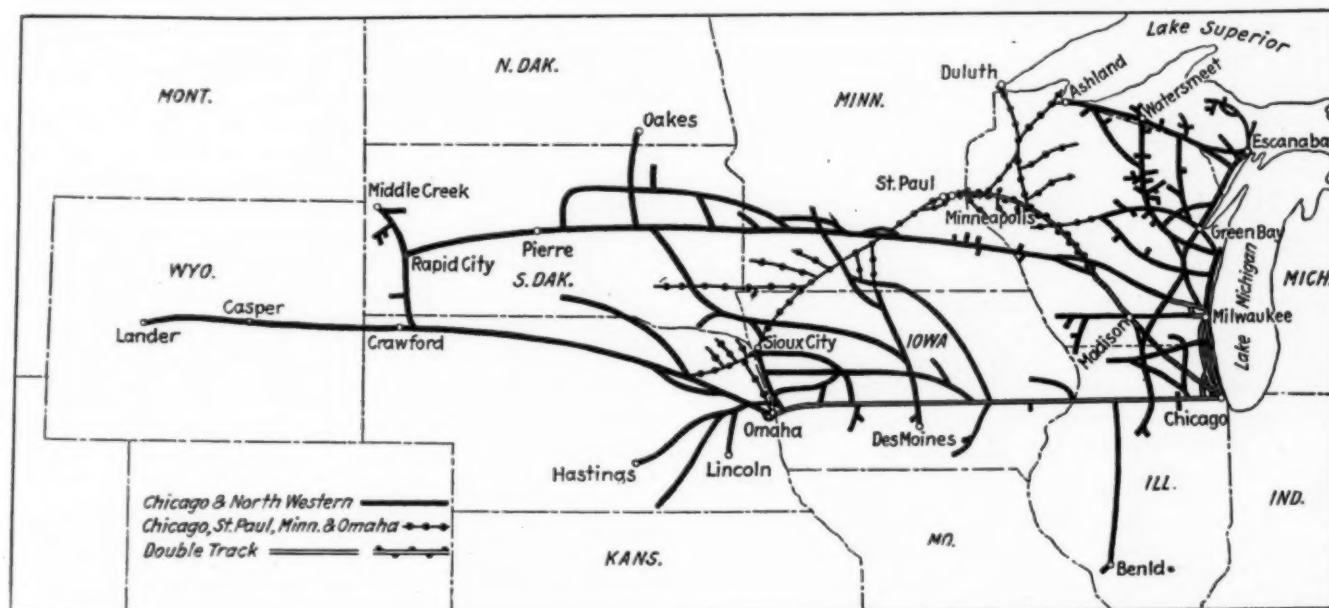
In 1924, as compared with 1923, the North Western moved 10.39 per cent less revenue tons and 10.36 per cent

income was \$821,300; the increase in interest on funded debt was \$893,022 which, with other factors, combined to overbalance the increase of \$940,676 in net railway operating income and to effect a decrease in the net income after charges, which decrease amounted to \$1,066,144.

Chicago, St. Paul, Minneapolis

& Omaha Increases Net

The Chicago, St. Paul, Minneapolis & Omaha fared somewhat better than the parent company. It had an increase of 1.60 per cent in its revenue ton-miles but a decrease of 0.27 per cent in its freight revenues. As compared with a decrease of 1.58 per cent in total revenues, there was a decrease of 5.64 per cent in total



The Chicago & North Western and the Chicago, St. Paul, Minneapolis & Omaha

less revenue ton-miles, and received 8.5 per cent less freight revenues. There was a decrease of 1.80 per cent in revenue passengers carried, of 2.17 per cent in revenue passengers carried one mile, and of 6 per cent in total passenger revenues. Total operating revenues showed a decrease of 6.84 per cent. On the other hand there was a decrease of 9.03 per cent in total operating expenses, expenses for maintenance of way having decreased 3.5 per cent; maintenance of equipment, 15 per cent, and transportation expenses 9 per cent. The result of the greater decrease in expenses than in revenues was an increase of 3.58 per cent net revenue from railway operations. The 1924 net railway operating income totaled \$16,784,051. This compared with \$15,843,375 in 1923 and represented an increase of 6 per cent.

The reason that this increase of 6 per cent was not carried down to net income after charges is readily explained by the decrease in other income, which was the result of the reduction in the dividend on the stock of the Chicago, St. Paul, Minneapolis & Omaha, and by increased interest on funded debt. The decrease in dividend

operating expenses. Net railway operating income in 1924 was \$3,408,989 as compared with \$3,028,915 in 1923, this representing an increase of 12½ per cent. Net income after charges in 1924 was \$1,036,908 as compared with \$624,173 in 1923, the per cent of increase being 66 per cent. In 1923, the company paid 7 per cent on its preferred and one semi-annual 2½ per cent dividend on its common. In 1924, only 5 per cent was paid on the preferred and nothing on the common. Dividends paid in 1923 were not fully earned, there being a deficit after their payment of \$627,896. There was a balance of \$473,943 after the reduced dividends that were paid in 1924.

North Western—Omaha Relations

The Chicago & North Western owns \$14,920,000 of the Omaha's total of \$29,818,945 capital stock and in January made an offer to buy more of it at the rate of exchange of three shares of its own preferred for two shares of Omaha preferred and five shares of its own common for seven shares of Omaha common. The result of exchange of stock in this manner will, if it proceeds

far enough, be to bring the two companies in even closer relationship than exists at present. The traffic, legal and purchasing departments of the North Western already have jurisdiction over the Omaha but the operating departments still retain their autonomy.

The North Western and the Omaha combined have a total mileage of 10,212, extending into nine states. Of the total mileage, 8,463 is North Western and 1,749 is Chicago, St. Paul, Minneapolis & Omaha. The North

livestock into Chicago. In 1924, the tonnage of coal was 12.91 per cent of the total tonnage and iron ore made up 14.64 per cent. The iron ore is carried from the Menominee range into Escanaba, Mich., and from the Gogebic range into Ashland, Wis. The road also secures some oil traffic from Wyoming. It moves refined petroleum into the Twin Cities and carries some crude oil for movement to refineries in Canada. It is noteworthy that the North Western's decreased tonnage in 1924 as compared

TABLE I—CHICAGO & NORTH WESTERN OPERATING RESULTS, SELECTED ITEMS, 1914 TO 1923

Year ended June 30,	Mileage	Revenue tons	Revenue ton-miles	Average haul	Revenue per ton-mile cents	Revenue train load	Revenue car load	Total operating revenues	Total operating expenses	Net operating revenue	Operating ratio	Net after charges
1914.....	8,071	43,309,643	6,229,944,000	144	0.87	348	18.44	\$83,677,051	\$59,405,142	\$24,271,909	70.99	\$12,306,142
1915.....	8,108	40,399,215	6,216,281,000	154	0.84	443 ^a	21.11 ^a	80,779,675	56,371,573	24,408,102	69.78	11,914,049
1916.....	8,108	51,238,459	7,412,266,000	145	0.81	491 ^a	22.06 ^a	91,313,866	61,952,329	29,361,537	67.85	17,282,510
Dec. 31												
1916.....	8,108	56,407,915	8,130,953,000	144	0.80	510 ^a	22.66 ^a	97,978,844	65,120,827	32,858,017	66.46	20,368,924
1917.....	8,108	60,288,051	9,220,973,000	153	0.78	544 ^a	24.62 ^a	108,264,983	78,758,989	29,505,995	72.75	17,125,031
1918.....	8,090	(1)	(1)	(1)	(1)	(1)	(1)	127,295,678	109,498,572	17,797,106	86.2	14,482,711
1919.....	8,090	51,981,263	8,294,483,000	160	1.110	450	20.05	(1)	(1)	(1)	(1)	13,982,582
1920.....	8,298	60,275,207	9,559,270,000	159	1.156	453	21.60	165,692,399	157,110,200	8,582,199	94.2	12,545,857
1921.....	8,403	39,227,758	6,775,908,000	173	1.412	383	19.35	144,775,476	129,091,428	15,684,048	89.17	def. 1,245,433
1922.....	8,404	48,607,124	7,579,554,000	156	1.329	430	20.07	146,100,437	119,191,134	26,909,303	81.58	8,897,536
1923.....	8,463	58,207,915	9,248,615,000	159	1.223	456	20.48	160,425,965	132,507,531	27,918,434	82.60	8,737,468
1924.....	8,463	52,158,316	8,290,313,000	159	1.249	445	19.72	149,454,584	120,536,645	28,917,939	80.65	7,671,324

(1) Figures not available in annual reports.

(2) Figures include non-revenue freight.

Western mileage includes notably the double track main stem from Chicago to Council Bluffs, Ia., and Omaha, Neb., the four-track line from Chicago to Milwaukee and the extensions therefrom in the eastern part of Wisconsin. It also includes the line across southern Minnesota, the better portion of the mileage of the combined system in Iowa, South Dakota and Nebraska, and all of the mileage in Illinois and in Wyoming. The southern part of the double track line between Chicago and the Twin Cities is operated by the North Western and the northern portion by the Omaha and a similar arrangement exists with reference to the line between the Twin Cities and Omaha, Neb. The really interesting feature of the relationships

with 1923 was reflected in practically all classes of commodities, except wheat and poultry.

The Omaha is more of a granger road than is the North Western. Its traffic in 1924 was divided as follows: Products of agriculture, 10.72 per cent, animals and products, 7.11 per cent; products of mines, 16.77 per cent; products of forests, 18.60 per cent; manufactures and miscellaneous, 18.65 per cent, and less than carload freight, 4.46 per cent.

Situation in Northwestern Region

The chief factor of interest in connection with the North Western at this particular time is that this

TABLE II—CHICAGO, ST. PAUL, MINNEAPOLIS & OMAHA OPERATING RESULTS, SELECTED ITEMS 1914 TO 1923

Year ended June 30,	Mileage	Revenue tons	Revenue ton-miles	Average haul	Revenue per ton-mile cents	Revenue train load	Revenue car load	Total operating revenues	Total operating expenses	Net operating revenue	Operating ratio	Net after charges
1914.....	1,748	8,466,632	1,294,143,000	153	0.880	307	19.23	\$18,210,083	\$12,834,117	\$5,375,966	70.48	\$2,021,615
1915.....	1,753	8,794,488	1,336,106,000	152	0.860	360 ^a	20.39 ^a	17,841,348	12,107,598	5,733,750	67.86	2,219,085
1916.....	1,753	10,082,061	1,578,936,000	157	0.810	390 ^a	21.30 ^a	19,522,562	12,958,838	6,563,725	66.38	3,003,027
Dec. 31												
1916.....	1,753	10,699,463	1,714,280,000	160	0.810	414 ^a	21.95 ^a	20,855,286	13,608,879	7,246,407	65.25	3,714,975
1917.....	1,749	10,695,384	1,678,231,000	157	0.830	429 ^a	23.07 ^a	21,476,509	15,841,313	5,635,196	73.76	2,118,589
1918.....	1,749	(1)	(1)	(1)	(1)	(1)	(1)	24,829,981	20,884,199	2,624,720	...	2,406,180
1919.....	1,749	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	2,376,718
1920.....	1,749	11,121,752	1,781,517,000	160	1.171	412	22.97	26,489,817	23,767,081	2,722,736	89.72	2,587,670
1921.....	1,749	8,691,370	1,345,870,000	155	1.433	356	20.70	28,137,408	24,392,314	3,745,093	86.69	—285,677
1922.....	1,749	9,516,320	1,479,069,000	155	1.325	384	20.82	27,801,007	22,297,050	5,503,956	80.20	1,177,929
1923.....	1,749	10,511,198	1,612,951,000	153	1.245	398	20.86	28,363,234	23,516,147	4,847,087	82.91	624,173
1924.....	1,749	10,567,741	1,638,715,000	155	1.222	409	21.30	27,915,736	22,189,824	5,725,913	72.49	1,036,908

(1) Figures not available in annual reports.

(2) Figures include non-revenue freight.

between the two lines is the fact that the territories served by each are so much the same.

Traffic

The North Western's traffic is more diversified than is that of the Omaha. In the case of the North Western, the traffic was divided in 1924 as follows: Products of agriculture, 15.01 per cent; animals and products, 5.50 per cent; products of mines, 42.37 per cent; products of forests, 12.73 per cent; manufactures and miscellaneous, 20.51 per cent, and less than carload freight, 3.88 per cent. Of leading importance is the eastbound movement of California fruits and vegetables and other traffic received from the Union Pacific at Omaha. The North Western is one of the largest carriers if not the largest carrier of

is the first of the roads in the northwestern region the operations of which we have studied this year in these columns. The North Western is patently not prosperous and like its neighbor carriers in the Northwest has been very slow to recover from the effects of federal control. In fact, since the war these roads have retrogressed and one of them has suffered so severely as to have gone into receivership. Many reasons have been suggested as the cause of the Milwaukee's receivership, including notably over-expansion. There unquestionably is something in that contention but the fact remains that none of the carriers in this territory is prosperous. It might readily be said that the Milwaukee's over-expansion was the reason that it has suffered receivership or suffered more than the rest of its neighbors.

There seem to be three essential reasons for the difficulties in the northwestern region: (1) a low rate structure compared with the rest of the country; (2) a lack of sufficient prosperity to produce sufficient traffic to compensate for the low rate level, and (3) there is a belief that the costs of operation in the Northwest have risen in greater proportion than they have in other sections of the country.

Rate Structure

The rate situation was pointed out in the brief recently filed by the western roads with the Interstate Commerce Commission with reference to the Hoch-Smith rate investigations. In that brief, ton-mile rate comparisons were made for the years 1911, 1915, 1921 and 1924, and it was shown that in 1924 as compared with 1911 there had been an increase in the earnings per ton-mile of 50.2 per cent in the United States as a whole, of 76 per cent in the eastern district, of 36.6 per cent in the southern district, but of only 28.7 per cent in the western district. To complete this comparison it should be added that in the same period the average increase in earnings per ton-mile in the case of the Chicago & North Western was 39 per cent.

Comparisons with 1916

It is common practice to make comparisons like this with 1916. In 1924, as compared with 1916, the rate relationships appear as follows: In the country as a whole, the increase in ton-mile earnings in 1924, as compared with 1916, was 58 per cent; in the eastern district, 74 per cent; in the southern district, 52 per cent, and in the western district, 45 per cent. However, the increase in the case of the Chicago & North Western was 56 per cent, or greater than in the case of either the western district or the southern district. The Omaha earnings per ton-mile show an increase of 51 per cent, more than in the case of the western district, and about the same as those for the southern district. The question that naturally follows is why should the southern roads become so prosperous as they have of late while the situation with reference to the Chicago & North Western is so much the opposite? The answer is simple enough. In 1924, as compared with 1916, the roads in the southern district had an increase of no less than 33½ per cent in their revenue ton-miles. The roads in the western district had an increase of 10 per cent, but this includes the prosperous roads in the Southwest as well as the less prosperous carriers in the Northwest. In the case of the Chicago & North Western, the increase in revenue ton-miles in 1924, as compared with 1916, was but 2 per cent. Under the conditions, therefore, it would be surprising if the North Western were overly prosperous.

This comparison may be carried further. The best index of pre-war net earnings is the standard return,—the annual net railway operating income for the three years ended June 30, 1917. The standard return of the Chicago & North Western was \$23,201,016. The net railway operating income in 1923 of \$15,843,375 was equivalent to 68 per cent of the standard return and that for 1924, \$16,784,051, equivalent to 72 per cent. For the northwestern region as a whole the net railway operating income in 1923 was 76 per cent of the standard return and in 1924, 71 per cent of the standard return. The Chicago & North Western was apparently much out of line in 1923 but in 1924 it reflected closely the situation as it existed in the entire region. It is no better off nor worse off than its neighbors. The standard return of the Chicago, St. Paul, Minneapolis & Omaha was \$4,934,790. The net railway operating income in 1923, \$3,028,915, was equivalent to 61 per cent of the standard return (which was out of line with the region), and the net operating income in

1924, \$3,408,987, equaled 69 per cent of the standard return.

Rate of Return

In 1924, the roads of this country had a net railway operating income equivalent to 4.33 per cent of their property investment, inclusive of materials and supplies and cash. The rate of return in the western region was 3.87 per cent but for the roads in the northwestern region it was only 3.12 per cent. We lack the figures for the Chicago & North Western and the Chicago, St. Paul, Minneapolis & Omaha to complete this picture. Such figures for 1923 follow: Rate of return for United States, 4.48 per cent; western region, 3.96 per cent; northwestern region, 3.45 per cent; the Chicago & North Western, 3.0 per cent, and the Chicago, St. Paul, Minneapolis & Omaha, 3.3 per cent.

This argument admittedly is not complete. To extend it further, however, would be merely to repeat material included in the brief of the western carriers, which was abstracted in the *Railway Age* of April 25, page 1023, or material which will be found in the North Western's own annual report. The western carriers contend that they are suffering from an unduly low rate level. One must believe that the roads in the northwestern region are in addition suffering from lack of traffic. However, the facts seem to show that the Chicago & North Western as one of the individual carriers in the region is meeting conditions that are merely those of the region as a whole.

Hearing on Nickel

Plate Unification

WASHINGTON, D. C.

THE hearing before Commissioner Meyer of the Interstate Commerce Commission on the Nickel Plate unification proposal was continued on May 7 and 8, after which an adjournment was taken until May 13. It was decided to continue the hearing through the week and then take another adjournment until May 25, because of other engagements of Commissioner Meyer, and it was indicated that the hearing would run into June. W. A. Colston, general counsel of the Nickel Plate, said that a witness would be put on to answer the questions put by Commissioner Meyer as to the method of arriving at the basis for the exchange of securities. A very large part of the time of the hearing has been taken up by protracted questioning of witnesses by counsel for the three groups of dissenting stockholders of the Chesapeake & Ohio and the Hocking Valley. Representatives of the dissenting stockholders of the Nickel Plate have withdrawn from the case.

John E. Oldham Says Plan Is Fair

John E. Oldham, of Merrill, Oldham & Co., Boston, testified on May 8 that the Nickel Plate plan, in his opinion, after a careful study of its financial phases, is "generally fair, generally sound and essentially fair to the security holders," as well as in the public interest as a first important step toward such consolidations as are contemplated by the transportation act.

Mr. Oldham said that each road is entitled to compensation in proportion to its contribution to the system and he analyzed the earnings of the various roads for 1923, which year he said was the most nearly normal one since federal control, and one which was more fairly representative than any other. After making certain adjustments to represent current results, such as by omitting payments by the government covering the federal control

period, Mr. Oldham presented a table comparing the percentage of contribution of each road in net income to the system with its percentage of participation in distribution by the Nickel Plate, on the basis of the proposed ratios of exchange of Nickel Plate stock for that of the other companies, as follows:

	Per cent of contribution	Per cent of participation
C. & O. and H. V.....	35.7	35.2
Erie	37.2	36.8
Nickel Plate.....	15.6	15.9
Pere Marquette.....	11.5	12.1
Hocking Valley.....	4.3	4.4

These figures, he said, amply justify the conclusion that the plan accords a high degree of fairness between the several companies. Even if the earnings of the Chesapeake & Ohio and Hocking Valley for 1924, which showed a greater increase than other roads in the group, be regarded as indicative of the future they cannot be safely considered as indicative of the price to be paid for their stocks because they would amount to more than a fair return and would probably be subject to recapture by the government. Also, he said, when the plan was proposed there was nothing to indicate that the earnings would so increase beyond those of other roads in the group.

Mr. Oldham also presented an analysis comparing the gross and net earnings and property values of the roads, the latter based on tentative valuation figures and underlying reports of the Bureau of Valuation brought up to date by the inclusion of additions and betterments. In percentages of the total for the proposed system the comparison was as follows:

	Gross	Net earnings	Property value
Chesapeake & Ohio.....	33.6	38.6	35
Erie	37.3	33.1	39.1
Nickel Plate	16.1	16.4	15.8
Pere Marquette.....	13.	11.9	10.9
Hocking Valley.....	4.9	4.3	5.3

Mr. Oldham also said that the plan is in furtherance of the purpose of the transportation act in that it sets up a new system in the East to compete with the Baltimore & Ohio, New York Central and Pennsylvania at important points and throughout the territory generally. It should show results substantially as satisfactory as those of the other systems and have less fixed charges and a larger percentage available for dividends and surplus than the average of the other systems.

Cross-examination of Mr. Oldham was postponed at the request of counsel for the Chesapeake & Ohio minority stockholders to allow them time to check up his figures.

Scott Committee Asks Dismissal of Application

At the opening of the session on May 8 Thomas R. Gay, counsel for the Scott protective committee of C. & O., stockholders, presented a motion for a dismissal of the application, preceded by a long statement reviewing the steps leading up to the application and charging fraud on the part of the majority directors of the Chesapeake & Ohio and Hocking Valley against the stockholders of those companies. Commissioner Meyer interrupted the statement after about half of it had been read, saying that it was an unusual procedure, but allowed it to be continued. The statement recited that after the purchase of the Huntington stock in the Chesapeake & Ohio by O. P. and M. J. Van Sweringen permission had been obtained for the election of eight directors to the Chesapeake & Ohio board who represented the Van Sweringen and Nickel Plate interests, and that the commission had been told that the Nickel Plate did not then own a controlling interest in the C. & O. Later, it was stated, the

stock was sold to the Nickel Plate and additional stock was obtained by the Van Sweringen interests, who then used their control of the Chesapeake & Ohio and their influence with the stockholders to transfer the properties of the C. & O. and Hocking Valley under lease to the Nickel Plate. It was charged that the officers of the roads became agents of the Van Sweringens, that their counsel was no longer available to the minority, and that the control thus "unlawfully" used constituted a fraud against the stockholders and rendered void the actions of the directors, including the application to the commission. It was then moved that an order be entered requiring the eight directors to show cause why the order of the commission permitting them to serve as directors of the Chesapeake & Ohio and Hocking Valley should not be set aside; that the commission set aside the order and require that directors be elected who are not connected with the Nickel Plate; that the Van Sweringen interests be required to sell all stock of the Chesapeake & Ohio held directly or indirectly and that the application be dismissed as not lawfully authorized by the boards of directors and stockholders because they were under the control of the Van Sweringens and the New York, Chicago & St. Louis.

Commissioner Meyer promptly replied that the latter part of the motion would be taken under advisement and for the other parts referred counsel to the rules of practice of the commission. W. A. Colston, general counsel of the Nickel Plate, said he had intended to object to the consideration of the motion as not being in accordance with the rules of practice because not presented before the hearing and not served on opposing counsel.

When the hearing was resumed on May 13 counsel for the Scott committee asked if argument could be had on the motion to dismiss the application. Commissioner Meyer said that argument, if any is to be allowed, would have to be before the full commission. Mr. Colston then presented a motion that the intervening committee be required to make more definite and certain their petition for intervention and the allegations in it and in the motion to dismiss, particularly as to the following: To set forth the position and interests of the intervenors and all persons whom they claim to represent; the names of the 2,500 stockholders they claim to represent and when they became owners of stock; what authorization the committee has to represent the stockholders, and whether or not, after having stated that the committee expected to serve without compensation, it had asked the stockholders to subscribe \$1 a share for expenses.

Cross-examination of Mr. Oldham occupied the sessions on Wednesday. It was largely directed at questioning his conclusions based on the earnings of the year 1923, whereas the earnings of the Erie and Pere Marquette showed a decrease in 1924 and those of the Chesapeake & Ohio and Hocking Valley showed a large increase in 1924. He was asked why he had not taken a five-year or ten-year average or given more weight to 1924. Mr. Oldham said that he had only used the 1923 figures after having tested them with those of other years to show that they were representative. He said that he had based his comparisons mainly on earning power and property value, although he had considered other factors, and that he had attempted to consider the fairness of the plan as between the different companies and not with reference to the terms of the lease or the exact terms as to the various stock issues.

THE WESTERN RAILWAY CLUB will hold its annual meeting at noon on Monday, May 18, at the office of the secretary, 189 West Madison street, Chicago.

Santa Fe Studies Weed Killing

Careful investigation by a committee of the results obtained during last four years demonstrates value of chemical treatment

THE Atchison, Topeka & Santa Fe has been confronted with a serious problem in keeping down weeds. Much of its 12,000 miles of lines traverse fertile agricultural sections in the central and south west, where the long warm seasons foster a luxuriant growth of a wide variety of grasses and other forms of vegetation. In many places a single cleaning is not sufficient to hold the vegetation in check throughout the season and the weeds must be cut twice or three times and in some sections even four and five times.

Chemicals were first used for killing weeds on the Santa Fe in 1912 when about 30 miles of track on the

only in 1920, and Class C track that which was treated in both 1919 and 1920. The program included 25 miles of track on the Gulf lines which were to be given an extra heavy treatment to determine the effect on Bermuda and Johnson grasses. Specifications were drawn to cover the amount of chemical to be applied on the various classes of track and the different widths of treatment and suitable arrangements were made to take photographs to show the conditions before and after the treatment. It was also provided that the general manager's representative on the committee should accompany the weed killing train while on his territory and that a chemist should also



Before and After Treatment on Track Infested with Johnson Grass

eastern portion of the system were treated with a solution prepared in the company's laboratory. For several years following, the mileage was increased annually, and several experiments were made with other solutions. During the war, chemical treatment was omitted altogether, but in 1919 it was resumed with a weed killer known as Atlas A. In 1920 this treatment, which was applied in the proportion of 20 parts of water to 1 part of chemical, was considerably extended.

The experience of these early years of treatment did not demonstrate definitely that chemical treatment was the solution of the weed killing problem. Encouraging reports from some points were counteracted by equally discouraging reports from other locations. However, some excellent results had been obtained. It was recognized, moreover, that the work had been more or less disorganized from a system standpoint. It was felt that the situation warranted closer study and a committee was appointed to investigate the whole question of weed killing and make suitable recommendations.

Over 2,000 Miles Treated in 1921

The result of the committee's investigation was the recommendation that some 2,100 miles of track be chemically treated by contract during 1921. This mileage was divided into three classes: Class A track comprising that not previously treated, Class B comprising that treated

be present to test the quality and strength of the solution applied.

Economy of Chemical Treatment on Dirt Track

On the whole, the 1921 application over the system was considered satisfactory with a few exceptions attributed to adverse weather conditions. There was some question, however, as to the economy of the chemical treatment on dirt track in view of the necessity of working over practically all of this class of track every season owing to the heavy power and equipment which it has become necessary to operate upon it. While the results obtained in killing the vegetation on such track were no less effective than elsewhere, this working over each season destroyed the sterilizing effect of the chemical beyond the year of application. In planning the next season's work, therefore, all dirt track was eliminated except one or two experimental sections, which reduced the 1922 program to less than 1,000 miles.

During the spring of 1922 a company sprinkling train was equipped for applying chemicals for experimental purposes and several sections on which the more resistant grasses flourished were set aside for experiments with extra heavy applications ranging up to 300 gal. of standard arsenic solution per mile. These experimental treatments, while eradicating some of the grasses, were somewhat disappointing in that they did not absolutely kill the

Bermuda grass and in killing off the Johnson grass, left the Bermuda grass to flourish without opposition.

The work done in 1923 was confined to the Western Coast and Gulf lines, owing to the fact that a large portion of the rock ballasted track on the Eastern lines that had been chemically treated previously was to be re-worked that season, making it inadvisable to treat it, with the result that less than 500 miles of track were treated.

Retards Growth of Resistant Grasses

It was noticed in the spring following the 1923 application that the more resistant grasses, if not killed, had been held in check and it was the general belief from observations that successive heavy treatments will eventually drive

opinion that track infested with the hardy variety of root grasses should have a heavy dose on the first application, followed by light annual treatments thereafter.

The itemized costs of applying chemicals with company apparatus during the 1924 season is given in the accompanying table which shows the 458 miles of track treated cost an average of \$85.85 per mile.

A tabulation of the information submitted by the general managers covering the cost of cleaning track by hand on rock and gravel ballast on sections set aside for special record shows that while there is a considerable variation, depending on the kind of ballast and the geographical location, the average hand cleaning cost approximates \$100 per mile, which indicates that there is economy in



A Heavy Growth of Sunflowers Was Readily Disposed of

back the Johnson, Bermuda and Salt grasses to a distance from the track where their presence will cause little or no trouble. Figures compiled indicated that the chemical solution, to a certain extent, was sterilizing the ground, as reflected by the low cost of hand cleaning in the year following that when the sections had been given a heavy application of chemicals, thus showing that the results of the treatment extend over two or more years.

The application of chemicals during the 1924 season was again made by the company sprinkling train under the direction of the chief chemist and the committee's representative for the territory treated, and such arrangements proved highly satisfactory as the gallons applied and the mile post locations were worked out more or less completely at the time of application. By treating to the full width of 20 ft. the more noxious grasses have been, to a certain extent, held in check, while the annual varieties have been destroyed.

Thus far, satisfactory results have not been obtained in eradicating the Bermuda grass, but it is believed that Johnson grass can be killed by the application of chemicals in heavy quantities and the committee is of the

the use of chemicals, even in first cost. In view of this conclusion, it is planned to treat over 500 miles of track with chemicals during 1925.

Suggestions as to Intent of Hoch-Smith Resolution

WASHINGTON, D. C.

THE National Industrial Traffic League has filed with the Interstate Commerce Commission a statement expressing the conclusion that the Hoch-Smith resolution does not change existing law and that its only effect is to direct the commission to institute a comprehensive general investigation into the entire rate structure of the country, during the progress of which, as expeditiously as possible, it shall from time to time make such decisions as it may find to be necessary and which the record may justify. The statement was adopted at the spring meeting of the league at Indianapolis, April 29-30, and approved for filing as a part of the commis-

TOTAL COST OF APPLYING CHEMICALS

Lines	Miles treated	Cost of chemical including freight	Work train	Extra labor	Water	Grand total	Average cost per mile	Average No. of gal. applied
Western	34.2	\$2,182.78	\$126.55	\$20.61	\$4.62	\$2,334.56	\$68.26	Varying
Coast	157.2	13,244.84	475.29	71.03	42.29	14,083.45	89.59	Varying
Los Angeles	25.5	1,692.99	136.26	38.56	8.67	1,876.48	73.58	170
Valley	56.4	4,653.63	403.96	74.35	25.93	5,157.87	91.45	206
Gulf	93.7	7,665.43	332.33	246.22	15.11	8,323.09	87.86	145
Northern	91.8	6,716.38	322.03	311.87	13.22	7,611.50	82.91	131
Total	458.8	\$36,156.05	\$1,796.42	\$762.64	\$109.84	\$39,386.95	\$85.85	....

Chemical costs—\$0.56½ per gallon, Spring delivery; \$0.40 per gallon Fall delivery.

sion's docket in its general rate structure investigation, No. 17,000. The statements invited as to the intent of the resolution and the procedure the commission should adopt in conducting the investigation have begun coming in in considerable numbers as the date for their filing, May 15, approaches. Until this week, less than a dozen statements had been filed. Replies to the various statements may be filed up to June 15, after which the commission is expected to announce its future program, probably including hearings. The suggestions that have thus far been filed vary widely and many are absolutely contradictory. They range from declarations that the resolution ought to be repealed to demands that particular groups of rates be reduced forthwith. Western railroads have asserted that, in order to provide for the maintenance of an adequate transportation system, the situation requires advances in their rates rather than reductions. Some statements take the position that the resolution is a criticism of an increasing tendency on the part of the commission to solve the complicated rate problems that arise in any comprehensive case by prescribing mileage scales of rates. Others assert with equal vigor that it means that present rates ought to be readjusted with more regard to the distance factor.

Many of the statements filed see in the resolution a clear mandate from Congress that the commission take steps at once to correct some particular case of alleged discrimination. The first industry to invoke the aid of that part of the resolution which directs that the conditions which at any given time prevail in an industry be considered, in so far as it is legally possible, was the bituminous coal industry, as represented by a large group of coal operators that asked that the commission re-open the lake cargo coal rate case to take additional evidence relating to the present situation of the coal business, but this petition was denied.

The National Industrial Traffic League, which speaks for the majority of its membership without attempting to set forth the particular views which may be held by groups of its members, urges "that the commission adopt a construction of the resolution which will not impair the fundamental principles of the interstate commerce act; that it prescribe rates which, in and of themselves, are just and reasonable, which give no undue preference or advantage to any class, industry or commodity, and throw no undue burden upon any commodity, person or community, and which will maintain individual carriers and an efficient transportation system as a whole." "The commission cannot lawfully abandon any of these fundamental standards in rate construction laid down by statutory development during thirty-seven years," it says, "or be swayed by any deference naturally paid to the supposed wishes of Congress. The public looks to this commission to maintain a leadership and an independence of thought and action, governed solely by the law of the land. A great mass of facts bearing upon the lawfulness of rates, the needs of commerce and of the carriers, will be developed in this investigation. We expect the commission to apply the standards of lawfulness to the facts revealed and to announce its conclusions as expeditiously as possible. The public is entitled to nothing less."

Referring to the requirement in the resolution that due regard be had to the maintenance of an adequate system of transportation, and to the fact that the railroads are not yet earning a fair return, the statement says the commission should take no action as a result of this investigation which will impair the ability of the carriers to render efficient transportation service. "If reductions in rates important in amount be made upon particular commodities, it is obvious that increases in rates must be made upon other commodities. The nature of this organization and its purposes precludes any expression in this statement

as to what if any commodities or localities are not paying their fair share of transportation costs. The duty of making such suggestions to the commission must be performed by individual shippers and especially by the carriers of the country."

Up to date the commission has received few, if any, suggestions as to what rates should be advanced to offset any reductions that it may see fit to order. The western roads suggested that the commission call upon other branches of the government for information regarding the situation of various industries.

Among the statements received is one from the Chicago, Rock Island & Pacific, which, after stating that any lowering of the rates on agricultural products will impair the present standards of service, says there is only one course that can be taken under the resolution. "That course should follow the line of investigation to determine what rates should be advanced and when it is shown that any class of traffic may properly bear an advance, authority should promptly be given to make the advance effective."

The Kentucky railroad commission in its statement expresses the belief "that the commission should be permitted to continue its program of ironing out the many inequalities existing, piece-meal, as you have started, which will place the citizens of one community on a commercial parity with citizens of other communities," and that the resolution in its intimation that the commission should use the market values of commodities as a guide for making rates is "impractical and beyond the power of man to be made workable."

The Southern Traffic League says that there is now taking place in the South under an orderly method of procedure a complete investigation of rates as comprehensive as that contemplated by the resolution and that "in view of the fact that the southern carriers are earning something in excess of the fair rate of return" any general revision of the rates in the South should be downward and any reduction in rates on any particular commodity need not be followed by compensatory increases on other commodities.

The Quincy, Ill., Freight Bureau announces its intention to work for a repeal of the resolution. The California Manufacturers' Association asks the commission to investigate the propriety of westbound transcontinental rates; the Eastern Shore of Virginia Produce Exchange asks the commission to investigate alleged discriminatory rates on fruits, vegetables and potatoes from its territory.

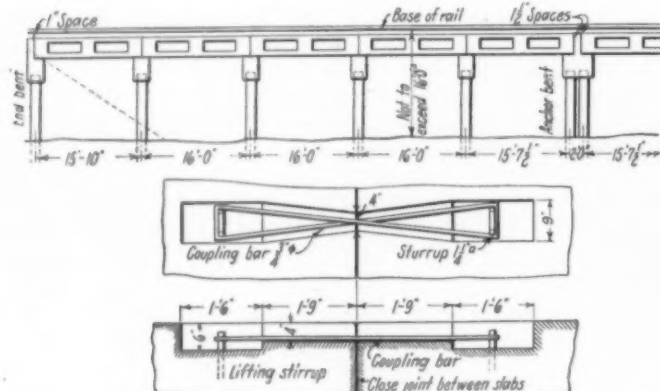
One of the few statements filed by representatives of agriculture was filed by C. S. Long, traffic manager of the Ohio Farm Bureau Federation, acting as representative of a conference of state farm bureau traffic men and the American Farm Bureau Federation held at Chicago on May 1 and 2, asking the commission to investigate the present method of billing mixed shipments of livestock. It was stated that shippers of mixed carloads are required to pay rates based on the highest combination of freight charges.

A statement filed by the Box Board Association asked the commission to make a thorough investigation and a general survey of rates and to publish a tentative report before any changes are made. The statement said the resolution assumes that the whole rate structure is out of alignment "and the truth of this indictment is by no means certain in spite of all the political capital that has been made of it."

The American Fruit Growers, Inc., filed a statement showing the rates paid and the receipts on a number of cars of canteloupes shipped from western points to Pittsburgh and asking the commission to note that the freight charges paid on these cars absorbed a very high percentage of the gross sale price.

Concrete Trestles on M-K-T

FEW types of railway bridge structures have become more nearly standardized as to both general features and details than the concrete pile trestle, indicating that the pioneers in this form of construction "built better than they knew." However, there is one feature of this form of construction wherein practice is subject to some variation, viz., the bearings of the slabs on the caps of the bents and the joints between the slabs. For this reason it is of interest to outline the manner in which these details have been worked out on the concrete trestles built by the Missouri-Kansas-Texas. This rail-



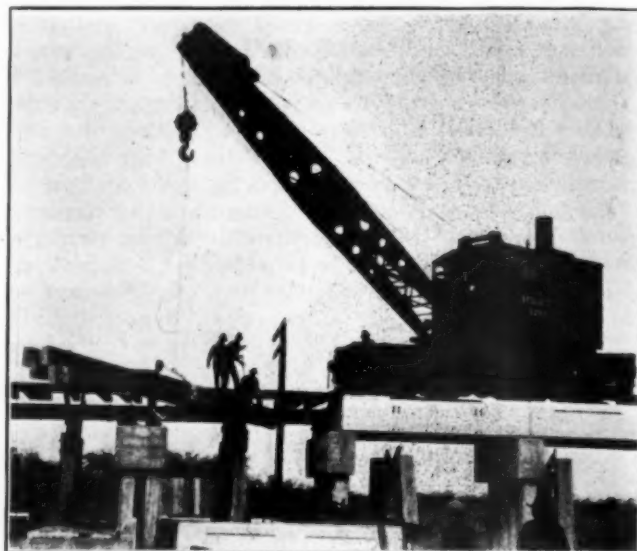
Arrangement of Spans and the Methods of Securing Slabs

road is applying this form of construction extensively in the replacement of open deck timber trestles on main lines in locations where permanence of the existing alignment and grade is reasonably assured, and recently completed a concrete trestle 1,438 ft. long about 42 miles south of Dallas at a cost of approximately \$60 per track foot.

The standard concrete trestle on this road has five-pile bents 16 ft. center to center with a double or anchor bent every five panels. Each span consists of two slabs 7 ft. wide with a joint along the center line of track, or an overall width of bridge of 14 ft. All slabs are made to a full length of 16 ft., or without any provision for clearance between the abutting ends of slabs in adjacent spans. In fact, this is an essential features of the plan followed in securing the slabs in place and in making provision for expansion. All slabs are set with tight transverse joints on the intermediate bents and are held in this position by

coupling bars looping over the lifting stirrups in slots provided in the top of the slabs at each end which are filled with concrete after the coupling has been set.

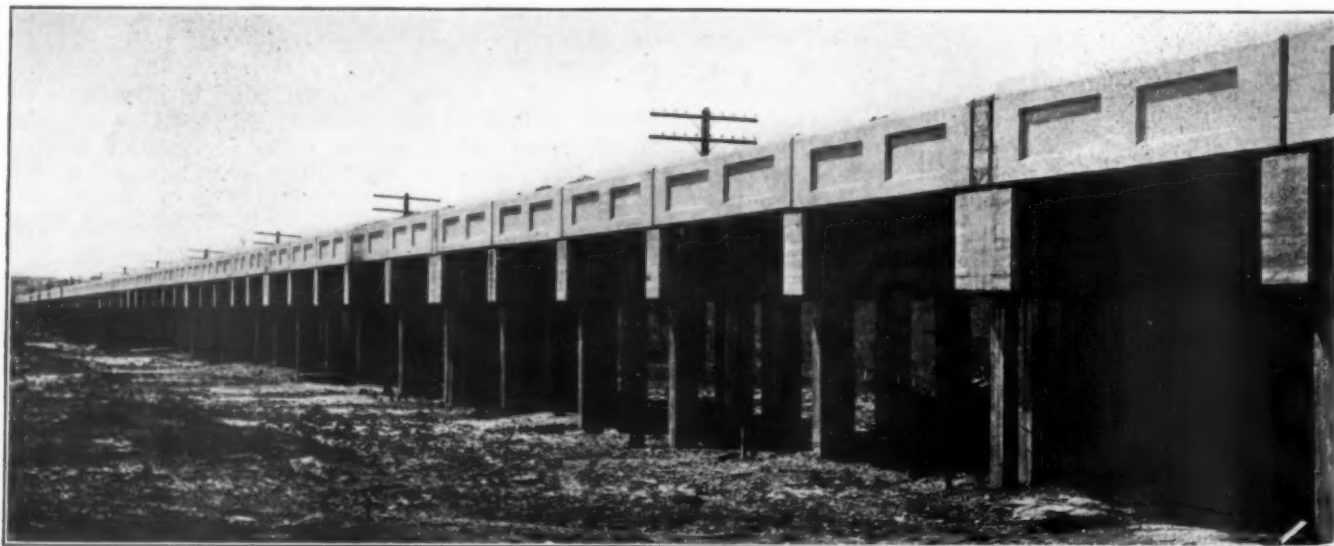
The end bents and anchor bents are provided with



Clearing Out the Old Trestle Deck to Set a Concrete Span

parapets or diaphragm walls projecting above the bridge seat, and finished to give the the same top outline as the slabs, or in other words, to afford a trough of uniform outline to receive the ballast from end to end of the bridge. These parapets are so dimensioned that the ends of the slabs supported on the end bent clear the parapet by one inch, and the slabs on the anchor bents clear the diaphragm 1 1/2 in. This clear space is filled with a mixture of 50 per cent Toch Bros. R.I.W. cement and 50 per cent of sand, the two sides of the joint space being calked with oakum to prevent the filler from leaking out. The entire surface of the bridge exposed to the ballast is covered with a coating of Toch Bros. self-healing bridge cement, or other approved coating applied hot. The tops of the bents or bearing seats for the slabs are finished with a troweled surface, and before the slabs are set this surface is covered with a layer of waterproofing pitch.

We are indebted for the above to F. Ringer, chief engineer, and R. M. Strubbs, engineer of bridges of the M-K-T.



A Concrete Trestle One Quarter Mile Long

Comparative Tests of Oil and Electric Lanterns

A SERIES of comparative tests have been conducted recently by a committee of Chicago & Alton officers to determine the relative merits of a standard type of oil lantern and an improved type of electric lantern. The tests were made with two oil lanterns (one white and one red) and with a new combination white and red "Ecolite" electric lantern manufactured by the Economy Electric Lantern Company, Chicago. The tests were conducted at night under various weather conditions on the Chicago & Alton, and also by the standard foot-candle meter method. The tests are reported as showing certain advantages in sighting distance and economy of operation in favor of the electric lantern.

The road tests were made between 8:30 and 10:30 p. m. on three different nights during February and March. On one occasion there was a heavy rain and fog, on another night it was slightly hazy but the moon was shining, while on the third night it was quite dark, but the weather was clear. Under these different conditions the two types of lanterns were compared at distances ranging from 600 to 8,100 ft. from the observers, and it is reported that in all cases the electric lantern could be seen more distinctly with both the white and red indications than the oil lanterns. For example, on the dark night of March 23, when the weather was clear the white oil lantern could not be seen beyond 7,300 ft., while the white electric light was seen up to 7,700 ft. and was still visible at 8,100 ft. On this same occasion the red oil light was not visible at 6,700 ft., while the red electric light could be seen faintly at this distance and was not invisible until a distance of 6,800 ft. had been reached.

Using a foot-candle meter in a dark room, a comparison of illumination at various distances was made with the two types of lanterns set in the normal vertical position. The dark room test showed that the illumination from the white electric light exceeded that from the white oil light by 50 per cent at 6 in. distance and by 300 per cent at 30 in. distance. In the case of the two red lights, both were equal at a distance of 6 in., beyond which the red electric light showed higher foot-candle illumination.

The committee conducting the tests pointed out several factors to be considered when comparing these two light sources. The wick on an ordinary oil lantern must be continually regulated as to wick height in order to compensate for the charring or burning up of the cotton wick which is essential in order to maintain a candle-power value comparable to that secured when the lantern is first lighted. Air currents influence the candle-power of the oil lantern but do not have any effect on the operation of the electric lantern; also if the flame in an oil lamp is blown out during a severe wind or rain storm it is sometimes difficult to relight it in the open, which trouble is not experienced with the electric lantern.

A table of estimated annual maintenance costs for both types of hand lanterns was included in the report of the committee as follows:

OIL LANTERN (FURNISHED BY ROAD)	
1 Lantern	\$1.45
46 Pints oil	0.58
9 Wicks	0.18
12 White globes	3.24
3 Red globes	2.49
Total	\$7.94
ELECTRIC LANTERN (PURCHASED BY EMPLOYEE)	
Dry battery, 6 renewals	\$2.16
Lamps (globes), 4 renewals	0.48
Total	\$2.64

It was estimated that if the 1,200 conductors, trainmen and yardmen of the Chicago & Alton all used their own electric lantern and the company furnished the batteries and bulb renewals there would be a saving to the company of about \$6,000 a year over the cost of maintaining oil lanterns.

Freight Car Loading

WASHINGTON, D. C.

FREIGHT car loading in the week ended May 2 showed another large increase to a total of 981,711 cars, an increase of 68,161 cars as compared with the corresponding week of last year and of 20,094 cars as compared with 1923. As compared with last year increases were reported in all districts and in all classes of commodities except grain and grain products and livestock, coal loading showing an increase of 22,030 cars, ore an increase of 15,898 cars, and miscellaneous freight an increase of 26,434 cars. As compared with 1923 there were reductions in the loading of livestock, coal and coke, but all other classes of commodities showed increases. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

REVENUE FREIGHT CAR LOADING—WEEK ENDED SATURDAY, MAY 2, 1925			
Districts	1925	1924	1923
Eastern	236,806	221,727	242,945
Allegheny	201,227	187,472	213,921
Pocahontas	44,950	36,981	38,324
Southern	147,809	132,282	139,236
Northwestern	150,889	140,556	133,353
Central Western	135,419	134,811	137,413
Southwestern	64,611	59,721	56,425
Total Western	350,919	335,088	327,191
Commodities			
Grain and grain products	35,858	43,368	34,163
Livestock	30,338	32,067	32,811
Coal	149,218	127,188	175,482
Coke	10,119	10,003	15,097
Forest products	78,454	75,568	72,177
Ore	59,146	43,248	37,943
Mdse., l. c. l.	260,109	249,773	240,957
Miscellaneous	358,769	332,335	352,987
Total	981,711	913,550	961,617
April 25	959,225	878,387	962,578
April 18	922,778	876,916	958,042
April 11	917,284	880,937	947,271
April 4	922,375	861,990	896,375
Cumulative total, 18 weeks	16,168,908	15,997,791	16,042,623

The freight car surplus decreased during the week of April 23 to 30 to an average of 337,181 cars, including 131,212 box cars and 160,913 coal cars. For the same period the Canadian roads had a surplus of 28,945 cars, including 25,300 box cars.

Car Loading in Canada

Revenue car loadings at stations in Canada for the week ended May 2 aggregated 50,512 cars, being an increase over the previous week of 507 cars. Compared with the same week last year there was a decrease of 4,447 cars, grain showing a decrease of 1,762 cars and coal a decrease of 3,139 cars.

Commodities	Total for Canada			Cumulative totals to date	
	May 2, 1925	Apr. 25, 1925	May 3, 1924	1925	1924
Grain and grain products ..	5,992	5,771	7,754	112,676	137,640
Live stock	2,225	2,098	2,193	40,345	38,944
Coal	1,965	1,949	5,104	79,105	89,231
Coke	281	271	266	5,425	4,485
Lumber	3,597	3,938	3,904	55,337	61,784
Pulpwood	1,855	1,997	1,832	64,008	65,594
Pulp and paper	2,024	2,128	1,823	37,908	37,815
Other forest products	2,786	1,974	2,289	55,085	54,192
Ore	1,172	1,515	1,440	21,164	18,308
Merchandise l. c. l.	16,091	16,372	15,542	260,436	240,417
Miscellaneous	12,524	11,992	12,812	187,197	191,491
Total cars loaded	50,512	50,005	54,959	918,686	939,901
Total cars received from connections	32,792	33,107	31,912	597,735	618,688

General News Department

The Order of Railway Conductors is in session at Minneapolis, Minn. The question of continuance of affiliation with other railway unions in political matters which aroused great dissension on the first day of the convention will again be taken up as the closing business of the session, according to reports.

The Brotherhood of Railroad Trainmen is holding its fourth triennial convention at Cleveland, Ohio, the expectation being that sessions will be kept up most of the time until the end of May. The headquarters of the brotherhood will be at Hotel Winton, while the ladies' auxiliary will hold a convention at Hotel Statler.

An inquiry into the general railway situation in Canada by a special committee of the Canadian Senate was urged a few days ago by Senator David of Montreal, and his resolution calling for a special committee "to inquire into and report upon the best means to relieve the country from its heavy railway expenditure" has been adopted by the Senate.

Charges against former railway shop crafts employees of contempt of court for violation of the injunction against violence in the shopmen's strike in 1922 were dismissed by Federal Judge Claude V. Luse at Superior, Wis., on May 8, according to press reports from that city. The injunction, which was alleged to have been violated, was granted the Chicago, St. Paul, Minneapolis & Omaha on July 20, 1922.

The Delaware, Lackawanna & Western has added its protest to those of the Reading and the Pennsylvania against the granting of permission by the Interstate Commerce Commission to the New York, Pittsburgh & Chicago to construct a new east-west line across the State of Pennsylvania. The railroads expressed this opinion in answer to questionnaires sent out by the commission to roads serving the territory.

Charges of misconduct in office brought against E. H. Fitzgerald, president of the Brotherhood of Railway and Steamship Clerks, Freight Handlers, Express and Station Employees, by the grand executive board of the brotherhood, were sustained at the annual convention at Kansas City, Mo., on May 8 by a vote of 819 to 682. The charges grew out of an attempt of President Fitzgerald to organize an investment company in connection with the brotherhood bank in Cincinnati.

John T. Broderick, superintendent of the safety department of the Baltimore & Ohio, in announcing the series of safety rallies to be held at the principal terminals on the road within the next few months, says that in connection with each rally there will be vocal and instrumental music, furnished by employees and members of their families, and that every rally will be followed by a dance, which will bring together the officers, the employees, their families and their friends. Two motion pictures are to be shown, and at each meeting there will be short addresses by one or more officers of the road, as well as by other members of the division safety committees. The motion pictures are entitled "Safety Pays" and "Gambling with Death."

Lenroot Wants Investigation of St. Paul Receivership

Senator Lenroot of Wisconsin has announced his intention of introducing a resolution at the next session of Congress calling for an investigation either by the Senate or by the Interstate Commerce Commission of the Chicago, Milwaukee & St. Paul receivership. In a statement to the press the Senator said that he had no reason to doubt the honesty and efficiency of the management of the road in recent years but "that there are rumors that a receivership was not absolutely necessary, but was brought about by a group of bankers and not in the interest of the stockholders."

A. T. & N. Pays Bonus to Employees

John T. Cochrane, president of the Alabama, Tennessee & Northern, who promised a year ago to give bonuses to the employees in the three principal departments of the road, if each department should show for one year as favorable a percentage of expenses to earnings as in the year then closing, has just announced to the men that the bonus has been earned, and that the checks will be delivered this week. This is for the 12 months ending with April, and is payable to men who continued in the service throughout the year. In the transportation department the beneficiaries are the enginemen, trainmen and hostlers; in the mechanical department, all mechanics, boiler washers, apprentices and pumpers; and in the roadway department, all foremen and assistant foremen.

Woodlock to Receive No

Salary Pending Confirmation

The comptroller general of the United States has issued a ruling that Thomas F. Woodlock, who was given a recess appointment as a member of the Interstate Commerce Commission after the Senate had failed to act toward confirming his appointment by the President, cannot receive any salary unless and until he shall hereafter be confirmed by the Senate. This ruling is in accordance with previous practice in the case of recess appointments. President Wilson appointed a member of the commission, Henry J. Ford, during a recess of the Senate, and, after serving for several months, he was not given an appointment; but Congress later voted an appropriation for his salary for the time of his service.

Additional Contract for Car Retarders

The Union Switch & Signal Company has been awarded a contract by the Illinois Central for the installation of a car retarder system in the northbound yard at Markham, Ill., near Chicago. There will be six towers, each tower to stand near the center of the area occupied by the retarders worked from that tower. The switches, as well as the retarders, will be operated by electro pneumatic apparatus, the well known non-interlocking system which has been in use for many years at classification yards all over the country. The northbound Markham yard will have 69 power operated switches.

The other contracts for the installation of car retarders on the Illinois Central noticed in the *Railway Age* of May 9, page 1145, were awarded to the General Railway Signal Company.

The Proposed Memorial for Lorenzo S. Coffin

A meeting of the committee appointed by the Safety Section of the American Railway Association to carry out its plans for a memorial to Lorenzo S. Coffin is to be held in New York on May 22, according to Charles Frederick Carter of the New York Central, who is chairman of the committee. The committee appointed by the Safety Section, which includes the committee of four of the Steam Railroad Section of the National Safety Council, has as its members, in addition to Mr. Carter, H. A. Adams, assistant to the general manager, Union Pacific; L. G. Bentley, general safety agent, Chesapeake & Ohio; T. P. Brennan, supervisor of safety, Long Island; T. C. Cashen, president, Switchmen's Union of North America; D. L. Cease, editor of the *Railroad Trainman*; W. M. Clark, vice-president, Order of Railway Conductors; C. Z. McLaughlin, vice-president, Brotherhood of Locomotive Firemen and Enginemen; W. J. Patterson, assistant director, Bureau of Safety, Interstate Commerce Commission; H. E. Wills, assistant grand chief engineer, Brotherhood of Locomotive Engineers, and Charles E. Hill, chairman, Steam Railroad Section, National Safety Council. The memorial is to record the appreciation of

railroad men for the notable service rendered by the late Mr. Coffin in making railroad operation safer.

locomotives recently ordered by the New York, New Haven & Hartford.

Great Northern Begins Mountain Grade Electrification

A contract for four electric locomotives and other equipment to be used in the electrification of mountain grades of the Great Northern has been closed with the Westinghouse Electric & Manufacturing Company. This electrification project, which was announced some time ago, will extend from Skykomish at sea level through the Cascade tunnel to the summit about 24 miles. The work will be undertaken immediately and it is planned for completion within 12 months. The cost is estimated at approximately \$1,000,000.

The locomotive will be driven by direct current motors which will be supplied with power through a motor-generator set, taking energy from a single-phase high voltage alternating current trolley. This is the same principle as will be used in the electric locomotives of the Detroit, Toledo & Ironton as well as in some of the

B. & M. Mechanical Department

Foremen "Get-Together"

Two years ago the mechanical department foremen at four of the larger points on the Boston & Maine started foremen's clubs. Four additional clubs were added during the past year, so that eight organizations with a total membership of over 500 are now functioning. These clubs meet monthly, the purpose being to secure a better knowledge of the fundamentals of sound leadership and to perfect their knowledge of mechanical standards and practices. About 250 of the members of these eight clubs held a "get-together dinner" at the American House in Boston on Saturday evening, May 9. The toastmaster was R. P. Whitchee, general car foreman at East Cambridge, who is chairman of the Association of Clubs.

(Continued on page 1232)

OPERATING REVENUES AND OPERATING EXPENSES OF CLASS I STEAM ROADS IN THE UNITED STATES

(FOR 152 STEAM ROADS, INCLUDING 16 SWITCHING AND TERMINAL COMPANIES)

FOR THE MONTH OF MARCH, 1925 AND 1924

Item	United States		Eastern District		Pocahontas Region		Southern Region		Western District	
	1925	1924	1925	1924	1925	1924	1925	1924	1925	1924
Average number of miles operated	236,649.85	236,041.27	59,490.93	59,518.97	5,500.12	5,504.91	38,515.99	38,336.86	133,142.81	132,680.53
Revenues:										
Freight	\$360,608,295	\$371,690,307	\$162,065,983	\$173,958,675	\$16,224,342	\$17,198,073	\$54,558,974	\$52,527,282	\$127,758,996	\$128,006,277
Passenger	79,572,000	87,134,014	37,991,560	40,476,038	1,908,920	2,074,366	12,619,434	13,068,589	27,052,086	31,515,021
Mail	8,210,684	8,117,982	3,167,190	3,189,608	224,558	203,194	1,159,752	1,155,444	3,659,184	3,569,736
Express	12,075,477	12,293,283	6,022,129	5,533,930	291,811	281,912	1,730,871	1,852,653	4,030,666	4,624,788
All other transportation	16,132,066	16,227,830	9,437,308	9,516,255	270,074	179,285	983,517	961,077	5,441,167	5,571,213
Incidental	9,264,444	9,351,745	4,558,357	4,754,202	376,881	346,506	1,279,417	1,249,607	3,049,789	3,001,430
Joint facility—Cr.	836,341	775,949	349,812	349,781	15,021	14,608	144,213	113,633	327,295	297,927
Joint facility—Dr.	214,507	219,723	101,764	127,178	2,773	3,067	37,980	32,618	71,990	56,860
Ry. operating revenues	486,484,800	505,371,387	223,490,575	237,651,311	19,308,834	20,294,877	72,438,198	70,895,667	171,247,193	176,529,532
Expenses:										
Maintenance of way and structures	61,090,232	59,603,843	25,744,266	24,665,850	2,723,702	2,893,721	9,051,136	9,135,960	23,571,128	22,908,312
Maintenance of equip't	108,846,377	113,306,273	53,235,487	55,720,212	4,777,767	5,069,297	13,271,214	13,765,863	37,561,909	38,750,901
Traffic	8,379,545	8,053,819	3,130,584	3,059,119	217,615	203,303	1,512,301	1,457,424	3,519,045	3,333,973
Transportation	181,012,311	192,201,137	85,863,587	93,663,225	5,782,835	6,573,002	24,839,648	25,531,594	64,526,241	66,433,316
Miscellaneous operations	4,166,399	3,982,953	1,906,596	1,933,181	95,655	87,654	580,136	469,264	1,584,012	1,492,854
General	14,779,835	14,322,769	6,496,579	6,388,191	468,112	466,161	1,872,781	1,846,961	5,942,363	5,621,456
Transportation for investment—Cr.	1,009,214	868,864	216,944	144,740	13,415	25,470	116,958	152,177	661,897	546,477
Ry. operating expenses	377,265,485	390,601,930	176,160,155	185,285,038	14,052,271	15,267,668	51,010,258	52,054,889	136,042,801	137,994,335
Net revenue from railway operations	109,219,315	114,769,457	47,330,420	52,366,273	5,256,563	5,027,209	21,427,940	18,840,778	35,204,392	38,535,197
Railway tax accruals	28,413,499	27,001,199	11,535,020	11,035,212	1,221,460	1,156,381	4,133,026	3,592,876	11,523,993	11,216,170
Uncollectible ry. rev's.	124,360	164,396	41,488	69,179	3,201	3,280	20,518	15,100	59,153	76,737
Ry. operating income	80,681,456	87,603,962	35,753,912	41,261,322	4,031,902	3,867,548	17,274,396	15,232,802	23,621,246	27,242,290
Equip't rents—Dr. bal.	5,610,031	5,801,982	3,059,639	3,853,625	d 334,502	d 374,492	1,090,358	650,340	1,794,536	1,672,509
Joint facility rent—Dr. balance	1,954,752	1,481,934	855,252	602,534	85,835	81,767	108,619	102,804	905,046	694,829
Net ry. oper'g income	73,116,673	80,320,046	31,839,021	36,805,163	4,280,569	4,160,273	16,075,419	14,479,658	20,921,664	24,874,952
Ratio of expenses to revenues (per cent.)	77.55	77.29	78.82	77.97	72.78	75.23	70.42	73.42	79.44	78.17
FOR THREE MONTHS ENDED WITH MARCH, 1925 AND 1924										
Average number of miles operated	236,636.69	236,029.02	59,500.05	59,519.61	5,501.07	5,500.96	38,499.63	38,335.13	133,135.94	132,673.32
Revenues:										
Freight	\$1,048,009,569	\$1,057,902,267	\$468,908,583	\$488,122,188	\$49,749,714	\$48,421,280	\$151,993,350	\$149,333,941	\$377,357,922	\$372,024,858
Passenger	245,802,100	262,255,296	117,049,241	121,312,477	5,693,286	6,041,326	40,015,190	40,520,812	83,044,383	94,380,681
Mail	23,996,358	23,783,007	9,149,057	9,156,632	655,803	588,123	3,431,737	3,381,048	10,759,761	10,657,204
Express	32,071,851	34,001,983	15,029,786	15,180,231	766,973	751,712	4,775,969	4,804,518	11,499,123	13,265,522
All other transportation	46,471,004	45,984,509	26,953,428	26,629,729	618,308	500,126	2,805,966	2,692,451	16,093,302	16,162,203
Incidental	27,890,994	27,739,744	13,841,627	14,147,368	1,001,981	991,761	3,950,651	3,516,656	9,096,735	9,083,959
Joint facility—Cr.	2,628,092	2,889,964	1,183,964	1,063,796	46,153	44,634	394,368	381,445	1,003,607	1,400,089
Joint facility—Dr.	633,057	642,003	302,774	326,149	6,433	6,783	104,090	95,323	319,760	213,748
Ry. operating revenues	1,426,236,911	1,453,914,767	651,812,912	675,286,272	58,525,785	57,332,179	207,263,141	204,535,548	508,635,073	516,760,768
Expenses:										
Maintenance of way and structures	172,985,012	169,373,334	74,881,873	71,422,140	8,004,347	7,728,808	26,850,128	26,277,013	63,248,664	63,945,373
Maintenance of equip't	318,690,736	330,643,533	154,896,791	161,582,797	13,932,595	14,538,546	39,217,274	40,579,771	110,644,076	113,942,419
Traffic	25,120,631	24,069,420	9,293,302	9,073,802	661,742	602,508	4,643,158	4,445,284	10,522,429	9,947,826
Transportation	546,509,000	574,838,435	258,705,824	276,821,066	17,710,668	19,425,451	73,707,962	75,876,900	196,384,546	202,715,018
Miscellaneous operations	12,572,928	12,098,180	5,949,265	5,889,947	275,194	253,290	1,748,009	1,359,604	4,600,460	4,595,339
General	43,136,737	42,402,986	19,126,521	18,888,437	1,383,586	1,287,784	5,525,486	5,494,400	17,101,144	16,732,365
Transportation for investment—Cr.	2,461,314	2,749,850	452,903	380,323	56,902	57,182	399,152	367,114	1,552,357	1,945,231
Ry. operating expenses	1,116,553,730	1,150,676,038	522,400,673	543,297,866	41,911,230	43,779,205	151,292,865	153,665,858	400,948,962	409,933,109
Net revenue from railway operations	309,683,181	303,238,729	129,412,239	131,988,406	16,614,555	13,552,974	55,970,276	50,869,690	107,686,111	106,827,659
Railway tax accruals	82,650,877	78,310,380	32,245,900	31,003,173	3,656,905	3,471,766	11,800,170	10,285,351	34,947,902	33,550,090
Uncollectible ry. rev's.	395,562	534,079	157,772	215,665	21,613	6,824	51,388	43,566	164,789	268,024
Ry. operating income	226,636,742	224,394,270	97,008,567	100,769,568	12,936,037	10,074,384	44,118,718	40,540,773	72,573,420	73,009,545
Equip't rents—Dr. bal.	17,569,848	16,484,697	9,213,473	10,641,260	d 1,218,377	d 1,067,989	2,771,973	1,581,013	6,802,779	5,330,413
Joint facility rent—Dr. balance	5,185,124	4,561,046	2,299,830	1,982,633	285,755	294,471	298,651	314,598	2,301,488	1,699,344
Net ry. oper'g income	203,881,770	203,348,527	85,495,264	88,145,675	13,868,659	10,847,902	41,048,694	38,645,162	63,469,153	65,709,788
Ratio of expenses to revenues (per cent.)	78.29	79.14	80.15	80.45	71.61	76.36	73.00	75.13	78.83	79.33

a Includes \$3,115,285 sleeping and parlor car surcharge. b Includes \$3,013,865 sleeping and parlor car surcharge. c Includes \$8,817,496 sleeping and parlor car surcharge. d Deficit or other reverse items. e Includes \$8,817,496 sleeping and parlor car surcharge. (Compiled by the Bureau of Statistics, Interstate Commerce Commission. Subject to revision.)

Freight Operating Statistics of Large Steam Roads—Selected Items for March, 1925,

Region, road and year	Average miles of road operated	Train-miles	Locomotive-miles		Car-miles		Ton-miles (thousands)		Average number of locomotives on line daily				
			Principal and helper	Light	Loaded (thousands)	Per cent loaded	Gross. Excluding locomotive and tender	Net. Revenue and non-revenue	Servicable	Unservicable	Per cent unservicable	Stored	
New England Region:													
Boston & Albany.....1925	404	241,784	257,761	25,854	5,035	68.8	252,065	93,556	128	14	9.8	...	
1924	394	287,024	307,632	32,529	5,528	69.2	279,542	110,263	125	19	13.0	...	
Boston & Maine.....1925	2,348	529,797	602,992	56,321	13,028	71.1	642,016	254,434	340	117	25.6	27	
1924	2,366	561,414	623,863	58,315	13,308	72.4	659,487	271,116	324	143	30.6	34	
N. Y., New H. & Hartf...1925	1,931	485,509	505,487	32,810	13,243	70.9	646,235	257,915	293	67	18.6	15	
1924	1,974	511,054	540,761	28,449	13,353	71.7	664,289	280,452	307	68	18.2	15	
Great Lakes Region:													
Delaware & Hudson.....1925	875	369,888	501,893	48,929	9,825	61.9	628,100	298,821	243	35	12.6	67	
1924	887	403,767	564,802	54,296	11,241	65.0	711,020	353,745	254	40	13.6	45	
Del., Lack. & Western...1925	993	578,726	678,195	92,749	18,352	70.0	1,022,963	458,764	298	63	17.4	21	
1924	993	593,607	713,108	105,404	18,736	69.6	1,013,947	456,092	297	63	17.4	6	
Erie (inc. Chic. & Erie)...1925	3,325	941,035	1,055,477	89,496	34,974	67.7	2,046,820	938,628	646	94	12.7	178	
1924	2,325	1,051,536	1,172,638	124,898	36,538	66.0	2,168,733	979,815	636	125	16.4	112	
Lehigh Valley.....1925	1,357	604,160	665,807	76,294	18,744	64.7	1,112,773	499,369	453	67	12.8	104	
1924	1,356	649,400	719,506	74,334	19,113	66.0	1,122,601	520,902	476	94	16.5	78	
Michigan Central.....1925	1,826	574,487	590,859	20,738	19,791	63.5	1,042,894	370,446	303	66	17.8	94	
1924	1,827	651,254	676,933	23,679	21,855	65.9	1,135,335	429,193	275	65	19.1	17	
New York Central.....1925	6,475	2,063,238	2,319,815	151,965	75,077	62.4	4,441,568	1,858,265	1,171	367	23.9	304	
1924	6,447	2,350,657	2,643,790	185,415	82,988	62.7	4,908,856	2,109,159	1,160	461	28.4	190	
New York, Chic. & St. L. 1925	1,669	663,598	671,975	7,638	20,684	66.7	1,117,283	442,990	254	60	19.0	61	
1924	1,669	739,301	748,584	3,755	22,306	67.5	1,205,464	496,612	252	50	16.7	43	
Pere Marquette.....1925	2,198	367,190	375,597	6,143	9,705	65.6	551,470	261,963	190	25	11.8	35	
1924	2,227	427,151	444,300	9,622	10,640	65.4	597,594	272,373	189	22	10.3	7	
Pitts. & Lake Erie.....1925	231	131,865	134,247	1,332	4,538	62.0	340,619	194,634	66	22	24.6	12	
1924	231	137,045	141,568	1,448	4,846	59.9	357,760	199,694	64	18	22.1	6	
Wabash.....1925	2,497	696,540	730,196	10,862	21,364	68.1	1,155,495	461,152	323	53	14.1	42	
1924	2,459	716,215	740,967	12,152	21,064	70.0	1,125,379	463,763	303	49	13.9	9	
Central Eastern Region:													
Baltimore & Ohio.....1925	5,196	1,846,772	2,150,268	161,685	53,432	65.0	3,313,665	1,581,943	908	336	27.0	69	
1924	5,207	1,990,784	2,293,299	202,489	56,139	66.0	3,408,733	1,657,643	1,032	246	19.2	128	
Central of New Jersey....1925	692	286,171	315,722	37,809	7,017	60.2	467,032	223,758	227	43	15.9	23	
1924	692	298,690	331,518	44,039	7,353	62.3	469,934	228,770	238	41	14.7	35	
Chicago & Eastern Ill....1925	945	240,879	242,625	4,349	6,601	64.3	395,686	188,508	122	37	23.2	41	
1924	945	259,649	260,518	4,373	6,628	63.0	406,285	197,008	120	47	28.1	19	
Clev., Cin., Chic. & St. L. 1925	2,376	693,567	734,106	12,128	21,477	63.7	1,341,618	624,358	367	72	16.5	68	
1924	2,376	742,698	782,702	13,961	22,282	62.8	1,396,391	668,212	328	95	22.4	19	
Elgin, Joliet & Eastern...1925	460	139,305	152,452	8,082	4,167	64.0	318,464	169,786	77	15	16.3	...	
1924	460	133,196	147,535	8,999	4,129	65.8	309,941	165,787	86	14	13.7	3	
Long Island.....1925	393	47,703	53,152	12,479	664	57.5	40,732	15,369	37	17	31.2	...	
1924	393	50,836	51,978	9,691	716	59.6	42,663	16,669	45	10	17.6	...	
Pennsylvania System.....1925	10,930	4,523,895	4,894,665	375,506	127,946	64.5	8,252,639	3,847,969	2,515	921	26.8	94	
1924	10,937	4,838,163	5,271,124	382,436	132,122	64.4	8,654,062	4,171,146	2,724	746	21.5	101	
Reading.....1925	1,132	637,792	701,502	69,805	16,258	62.0	1,088,173	548,674	398	77	16.2	83	
1924	1,142	671,813	746,324	80,903	16,999	65.0	1,119,039	582,156	395	78	16.5	90	
Pocahontas Region:													
Chesapeake & Ohio.....1925	2,597	1,062,239	1,122,526	30,484	30,911	56.6	2,403,021	1,275,666	486	109	18.3	42	
1924	2,559	1,036,363	1,136,978	28,462	31,273	59.4	2,291,711	1,237,092	433	103	19.3	14	
Norfolk & Western.....1925	2,230	797,009	960,775	34,708	24,910	61.3	1,905,114	999,706	558	88	13.7	141	
1924	2,231	890,653	1,105,512	42,226	25,673	60.9	1,981,622	1,058,845	564	119	17.4	82	
Southern Region:													
Atlantic Coast Line.....1925	4,879	948,550	966,531	15,770	24,221	61.6	1,303,575	503,769	375	45	10.7	18	
1924	4,865	911,219	919,623	14,018	22,221	62.4	1,177,636	445,701	377	51	12.0	19	
Central of Georgia.....1925	1,907	362,247	363,371	5,765	8,222	72.9	434,062	195,910	153	13	7.7	31	
1924	1,907	329,946	332,442	6,647	7,463	72.3	389,551	177,669	136	19	12.0	5	
I. C. (inc. Y. & M. V.)...1925	6,225	1,693,840	1,711,662	35,992	49,478	64.7	3,015,322	1,273,726	779	110	12.4	74	
1924	6,198	1,779,602	1,794,845	44,612	49,960	65.1	3,037,665	1,318,189	792	134	14.5	27	
Louisville & Nashville....1925	5,027	1,667,435	1,779,125	68,821	31,892	63.5	2,041,332	978,821	588	112	16.0	35	
1924	5,026	1,835,574	1,959,154	74,762	33,392	61.3	2,195,068	1,053,621	621	103	14.2	2	
Seaboard Air Line.....1925	3,755	637,324	651,526	14,611	15,338	66.6	841,517	338,037	228	42	15.5	...	
1924	3,548	590,257	603,793	9,790	13,742	67.4	741,016	292,763	224	39	14.7	...	
Southern Ry.....1925	6,840	1,542,365	1,601,004	37,202	37,012	68.1	1,993,658	819,620	851	123	12.6	49	
1924	6,820	1,520,596	1,560,406	34,026	35,496	68.9	1,906,350	790,768	863	103	10.7	...	
Northwestern Region:													
Chic. & North Western...1925	8,463	1,365,084	1,397,720	23,035	31,821	65.3	1,751,633	717,876	779	217	21.8	152	
1924	8,463	1,538,810	1,599,335	21,797	33,820	64.6	1,850,926	746,435	872	229	20.8	74	
Chic., Milw. & St. P....1925	11,202	1,508,985	1,590,750	75,092	42,187	66.8	2,342,719	1,026,504	967	171	15.0	114	
1924	10,983	1,675,727	1,727,127	70,638	42,992	65.1	2,414,247	1,064,089	960	164	14.6	95	
Chic., St. P., Minn. & Om. 1925	1,726	304,491	320,247	12,535	6,045	69.8	325,068	135,098	154	45	22.6	22	
1924	1,726	332,394	357,374	14,943	6,548	69.0	355,152	151,906	170	34	16.6	2	
Great Northern.....1925	8,251	713,493	737,955	41,102	22,789	69.6	1,237,349	568,022	623	161	20.6	155	
1924	8,252	753,321	783,444	46,232	23,602	69.5	1,299,956	592,531	617	185	23.1	143	
M., St. P. & S. Ste. M. 1925	4,375	507,136	518,643	5,739	12,441	70.3	635,180	283,575	298	44	12.8	31	
1924	4,374	551,108	565,425	8,394	12,796	70.7	657,198	297,363	287	56	16.3	15	
Northern Pacific.....1925	6,440	732,755	765,005	41,691	24,075	75.4	1,256,198	587,162	521	177	25.3	117	
1924	6,415	798,448	835,331	46,954	24,413	69.2	1,356,147	612,059	562	165	22.7	89	
Oreg.-Wash. R. R. & Nav. 1925	2,181	176,603	185,828	15,154	5,098	75.1	273,320	125,000	138	22	13.8	20	
1924	2,179	203,178	213,585	18,372	5,569	75.7	294,253	135,930	141	25	15.0	17	
Central Western Region:													
Atch., Top. & S. Fe (incl. 1925	10,045	1,446,417	1,529,710	76,830	44,089	65.4	2,491,950	942,612	828	165	16.6	267	
P. & S. F.).....1924	9,856	1,460,753	1,534,936	81,592	42,208	66.8	2,379,507	904,910	797	153	16.		

Compared with March, 1924, for Roads with Annual Operating Revenues Above \$25,000,000.

Region, road and year	Average number of freight cars on line daily					Gross tons per train, excluding locomotive and tender	Net tons per train	Net tons per loaded car	Net ton- miles per car-day	Car miles per car-day	Net ton- miles per mile of road per day	Pounds of coal per 1,000 gross ton-miles including locomotive and tender	Locomo- tive miles per locomotive day	
	Home	Foreign	Total	Per cent un- servic- able	Stored									
New England Region:														
Boston & Albany.....1925	2,765	5,931	8,696	2.8	97	1,043	387	18.6	347	27.1	7,468	193	64.3	
1924	1,917	6,016	7,933	3.5	....	974	384	19.9	448	32.5	9,029	204	76.7
Boston & Maine.....1925	14,040	14,691	28,731	7.9	....	1,212	480	19.5	285	20.5	3,495	153	46.5
1924	13,722	17,419	31,141	11.5	....	1,175	483	20.4	281	19.0	3,697	170	47.1
N. Y., New H. & Hartf.....1925	19,390	19,546	38,936	22.8	501	1,331	531	19.5	214	15.5	4,309	149	48.3	
1924	18,909	19,298	38,207	19.0	....	1,300	549	21.0	237	15.7	4,582	158	48.9
Great Lakes Region:														
Delaware & Hudson.....1925	9,961	6,521	16,482	5.9	110	1,698	808	30.4	584	31.0	11,014	186	63.8	
1924	9,637	7,962	17,599	5.1	....	1,761	876	31.5	648	31.7	12,858	201	68.0
Del., Lack. & Western.....1925	16,899	8,258	25,157	3.8	....	1,768	793	25.0	588	33.6	14,910	171	69.0
1924	14,187	11,224	25,411	4.1	....	1,708	768	24.3	279	34.1	14,823	194	73.4
Erie (inc. Chic. & Erie).....1925	37,155	20,475	57,630	7.3	12,002	2,175	997	26.8	525	28.9	13,020	134	50.0	
1924	30,513	21,153	51,666	7.0	3,201	2,062	932	26.8	611	34.6	13,596	146	55.0	
Lehigh Valley.....1925	23,018	10,218	33,236	7.4	....	1,842	827	26.6	484	28.1	11,874	157	46.1
1924	21,388	11,244	32,632	7.4	....	1,729	802	27.3	515	28.6	12,393	169	44.9
Michigan Central.....1925	14,144	16,185	30,329	5.7	1,597	1,815	645	18.7	394	33.2	6,545	127	53.6	
1924	10,607	19,830	30,437	5.2	....	1,743	659	19.6	455	35.1	7,580	137	66.6
New York Central.....1925	73,134	67,425	140,559	4.1	25,361	2,153	901	24.8	426	27.6	9,258	129	51.9	
1924	57,441	83,849	141,290	4.9	18,930	2,088	897	25.4	481	30.2	10,553	131	56.3	
New York, Chic. & St. L.....1925	11,336	10,505	21,841	6.7	3,557	1,684	668	21.4	654	45.7	8,564	126	70.0	
1924	8,422	12,848	21,270	5.2	797	1,631	672	22.3	752	50.0	9,600	137	80.3	
Pere Marquette.....1925	9,917	8,280	18,197	6.7	2,026	1,502	713	27.0	464	26.2	3,844	119	57.3	
1924	8,205	14,278	22,483	3.6	351	1,399	638	25.6	391	23.3	3,945	147	69.4	
Pitts. & Lake Erie.....1925	15,435	8,552	23,987	4.3	1,785	2,583	1,476	42.9	262	9.8	27,126	76	50.1	
1924	10,823	11,680	22,503	3.3	1,874	2,611	1,457	41.2	286	11.6	27,861	77	56.5	
Wabash.....1925	13,235	11,109	24,344	2.6	860	1,659	662	21.6	610	41.5	5,958	145	63.6	
1924	10,902	12,398	23,300	3.0	406	1,571	648	22.0	642	41.6	6,083	158	69.0	
Central Eastern Region:														
Baltimore & Ohio.....1925	70,706	32,803	103,509	9.6	1,955	1,794	857	29.6	493	25.6	9,821	176	60.0	
1924	64,158	40,115	104,273	8.0	6,886	1,712	838	29.7	516	26.3	10,332	192	63.0	
Central of New Jersey.....1925	18,512	10,650	29,162	3.3	3,822	1,632	782	31.9	247	12.9	10,428	181	42.2	
1924	16,364	11,281	27,645	5.2	2,972	1,573	766	31.1	267	13.8	10,664	192	43.4	
Chicago & Eastern Ill.....1925	15,642	4,235	19,867	17.8	4,490	1,643	783	28.6	305	16.6	6,434	154	50.0	
1924	14,479	4,849	19,328	13.7	2,846	1,565	759	29.7	328	17.5	6,724	181	51.4	
Clev., Cin., Chic. & St. L.....1925	17,423	19,676	37,099	4.0	9,105	1,934	900	29.1	518	29.0	8,475	130	54.8	
1924	13,789	22,562	36,351	5.6	2,788	1,880	900	30.0	565	31.2	9,073	138	60.8	
Elgin, Joliet & Eastern.....1925	10,034	8,170	18,204	8.4	291	2,286	1,219	40.7	301	11.5	11,912	148	56.3	
1924	10,304	8,158	18,462	5.7	698	2,327	1,245	40.2	290	11.0	11,633	147	50.8	
Long Island.....1925	1,945	5,069	7,014	0.8	177	854	322	23.1	71	5.3	1,261	323	39.1	
1924	1,740	6,541	8,281	0.9	....	839	328	23.3	65	4.7	1,367	333	36.5
Pennsylvania System.....1925	216,873	85,481	302,354	10.2	42,928	1,824	851	30.1	411	21.2	11,357	141	49.5	
1924	190,601	109,457	300,058	8.1	30,099	1,789	862	31.6	448	22.1	12,303	158	52.5	
Reading.....1925	24,686	15,188	39,874	2.4	3,525	1,706	860	33.7	444	21.3	15,641	176	52.4	
1924	19,431	17,317	36,748	2.9	....	1,656	867	34.2	511	23.0	16,439	192	56.4
Pocahontas Region:														
Chesapeake & Ohio.....1925	33,699	9,099	42,798	3.6	4,614	2,262	1,201	41.3	960	41.1	15,845	118	62.5	
1924	27,627	12,936	40,563	4.9	2,519	2,211	1,194	39.6	982	41.7	15,596	136	70.1	
Norfolk & Western.....1925	32,492	8,552	41,044	4.3	2,810	2,390	1,254	40.1	784	31.8	14,461	160	49.7	
1924	25,395	11,922	37,317	3.3	1,200	2,225	1,189	41.2	915	36.4	15,311	195	54.2	
Southern Region:														
Atlantic Coast Line.....1925	20,068	19,912	39,980	4.1	....	1,374	531	20.8	403	31.5	3,331	126	75.4
1924	20,444	16,997	37,441	3.6	....	1,292	489	20.1	384	30.7	2,955	136	70.3
Central of Georgia.....1925	4,090	6,964	11,054	4.3	....	1,198	541	23.8	570	32.9	3,314	156	71.7
1924	3,924	6,608	10,532	5.3	....	1,181	539	23.8	544	31.6	3,006	169	71.0
I. C. (inc. Y. & M. V.).....1925	49,180	20,179	69,359	4.2	4,054	1,780	752	25.7	592	35.5	6,600	137	63.4	
1924	41,661	22,972	64,633	4.3	3,700	1,707	741	26.4	657	38.2	6,861	149	64.1	
Louisville & Nashville.....1925	42,551	18,368	60,919	7.8	106	1,224	587	30.7	517	26.5	6,281	182	85.1	
1924	37,417	22,105	59,522	5.5	105	1,196	574	31.6	571	29.5	6,673	186	90.7	
Seaboard Air Line.....1925	10,588	13,547	24,135	3.1	....	1,320	530	22.0	452	30.7	2,904	150	79.5
1924	8,755	11,668	20,423	5.8	....	1,255	496	21.3	462	32.2	2,662	160	75.3
Southern Ry.....1925	39,317	23,863	63,180	4.6	....	1,293	531	22.1	418	27.7	3,866	172	54.2
1924	34,379	27,937	62,316	4.5	....	1,254	520	22.3	409	26.7	3,740	190	53.2
Northwestern Region:														
Chic. & North Western.....1925	48,457	25,383	73,840	10.3	9,323	1,283	526	22.6	314	21.3	2,736	155	46.0	
1924	44,022	31,410	75,432	7.2	1,500	1,203	485	22.1	319	22.3	2,845	177	47.5	
Chic., Milw. & St. P.....1925	54,106	20,464	74,570	9.1	....	1,553	680	24.3	443	27.3	2,956	164	47.2
1924	49,595	27,220	76,815	6.5	4,000	1,441	635	24.8	446	27.6	3,125	175	51.6	
Chic., St. P., Minn. & Om.....1925	3,581	9,122	12,703	9.6	1,162	1,067	444	22.3	343	22.0	2,525	160	53.9	
1924	3,363	10,347	13,710	8.5	726	1,068	457	23.2	357	22.3	2,839	168	59.0	
Great Northern.....1925	45,381	10,580	55,961	7.6	....	1,734	796	24.9	322	18.6	2,221	154	32.0
1924	43,443	8,341	51,784	5.9	....	1,726	787	25.1	365	20.9	2,316	161	33.4
M., St. P. & S. Ste. M.....1925	19,515	5,865	25,380	5.1	937	1,252	559	22.8	359	22.4	2,091	129	49.5	
1924	17,857	8,449	26,306	4.7	355	1,193	540	23.2	364	22.1	2,193	135	54.0	
Northern Pacific.....1925	34,337	7,801	42,138	6.7	....	1,714	801	24.4	448	24.3	2,941	131	37.3
1924	31,288	9,748	41,036	7.6	....	1,698	767	25.1	480	27.6	3,078	130	39.1
Oreg.-Wash. R. R. & Nav.....1925	5,852	3,636	9,488	3.7	....	1,548	708	24.5	424	23.0	1,849	198	40.6
1924	5,397	3,580	8,977	6.7	....	1,448	669	24.4	488	26.4	2,012	208	45.1
Central Western Region:														
Atch., Top. & S. Fe (incl. P. & S. F.).....1925	59,623	16,624	76,247	6.2	19,470	1,723	652	21.4	396	28.4	3,027	129	52.2	
1924	51,368	15,050	66,418	6.8	12,536	1,629	619	21.4	439	30.7	2,962	150	54.9	
Chicago & Alton.....1925	10,099	6,459	16,558	3.4	1,000	1,500	633	24.8	344	21.8	5,601	151	65.	

(Continued from page 1229)

Brief addresses were made by President J. H. Hustis; Prof. W. J. Cunningham, James J. Hill, Professor of Transportation at Harvard; Vice-President and General Manager B. R. Pollock; Mechanical Superintendent W. O. Forman; Consulting Mechanical Engineer C. H. Wiggin; Hayes Robbins, on President Hustis' staff; Frank H. Becherer, general inspector of car maintenance, who is secretary of the association of clubs; and Roy V. Wright, managing editor of the *Railway Age*. The eight clubs held 49 meetings during the season, at which the attendance varied from 40 to 90. The programs included an address followed by open forum discussions. There are Car and Locomotive Foremen's Associations at Concord, N. H.; East Fitchburg, Mass.; East Deerfield, Mass.; Mechanicville, N. Y.; Lyndonville, Vt., and Springfield, Mass. There are two clubs at the Billerica (Mass.), shops—a Locomotive Foremen's Association and a Car Foremen's Association.

Air Brake Association Program

The Air Brake Association will open its thirty-second annual convention at 9:30 a. m., May 26, 1925, in the convention hall of the Alexandria Hotel, Los Angeles, Cal. The first paper on the program deals with "Passenger train handling; graduated release," contributed by the Central Air Brake Club. Other important subjects to be discussed during the convention are automatic train control, brake pipe leakage and the condemning limits of the A. R. A. standard triple valve parts. The program is as follows:

- TUESDAY, MAY 26**
- 9:30 a. m. Invocation and address of welcome.
 - 9:55 a. m. Opening address.
 - 10:15 a. m. President's address, C. M. Kidd.
 - 10:45 a. m. Presentation of past president's badges.
 - 11:00 a. m. Intermission.
 - 11:30 a. m. Report of secretary and treasurer.
 - 11:45 a. m. New business and unfinished business.
 - 12:15 p. m. Appointment of committees by the president.
 - 2:00 p. m. Paper by the Central Air Brake Club on "Passenger Train Handling; Graduated Release," presented by James Elder.
- WEDNESDAY, MAY 27**
- 9:30 a. m. Paper by the Pittsburgh Air Brake Club on "More Efficient Air Compressors," presented by C. B. Miles.
 - 11:00 a. m. Report of committee on "Condemning limits of A. R. A. standard triple valve parts."
 - 2:00 p. m. Reconvene. Continuation of report on "Condemning limits of A. R. A. standard triple valve parts."
 - 3:15 p. m. Train control talks.
- THURSDAY, MAY 28**
- 9:30 a. m. Report of committee on "Brake Pipe Leakage."
 - 11:00 a. m. Paper on "What are you specifying and what are you getting in foundation rigging of car equipment," by the North West Air Brake Club.
 - 2:00 p. m. Paper by the Manhattan Air Brake Club on "Triple valve slide valve leakage indicator."
 - 3:15 p. m. Committee report on "What is the best material for air brake and air signal piping."
- FRIDAY, MAY 29**
- 9:30 a. m. Report of committee on recommended practice.
 - 11:00 a. m. Reports of committees.
 - 12:00 a. m. Election of officers.

Claim Agents to Meet in Winnipeg

The annual meeting of the Association of Railway Claim Agents will be held at the Royal Alexandra Hotel, Winnipeg, Man., on June 17-19. An address will be made at the opening session by D. C. Coleman, vice-president of the Canadian Pacific. The remainder of the morning of the 17th will be devoted to committee reports. In the afternoon the following topics will be the order of business: "What Constitutes a Good Settlement?" by F. A. Kelly, chief claim adjuster of the Atchison, Topeka & Santa Fe, Los Angeles, Cal.; "Analysis of Facts Essential to a Proper Investigation," by Arthur Stimple, district claim agent of the Chicago & North Western, Chicago; "Holding Cases for Settlement Direct with Claimant," by F. D. Perry, claim agent of the Chicago, Burlington & Quincy, Chicago; "Some Interesting Cases, the Davis Case and Others," by E. C. Craig, general attorney of the Illinois Central, Chicago; and "Antecedent Disease or Latent Diseased Condition as a Factor in Determining Damages Both at Common Law and Before Compensation Boards, when the Doctrine of Exciting Cause is Applied. How Best to Meet the Situation," by C. S. Williston, claims attorney of the Pullman Company, Chicago. On June 18 the following subjects will be brought before the convention for discussion: "Has There Been Any Change in Public Sentiment as Affecting Damage Suits Against the Railroads?" by O. F. Ellington, general claim agent of the Texas & Pacific, Dallas, Texas; "The Increasing Value of the Claim Agent in Connection

with the Preparation and Trial of Cases," by Smith R. Brittingham, assistant general solicitor of the Seaboard Air Line, Norfolk, Va.; "What are the Claim Departments Doing with Regard to Prevention of Economic Waste Due to Accidents and Injuries?" by J. S. Palmer, general claim agent of the Chicago, Rock Island & Pacific, Chicago; "What Can We do as Field Men to Advance Ourselves in our Profession as Claim Agents?" by C. H. McKinney, district claim agent of the Louisville & Nashville, Knoxville, Tenn.

The annual banquet will be held at the Royal Alexandra Hotel on the evening of June 18. On Friday, June 19, officers will be elected and the place of the next meeting selected.

The American Delegation to the London Congress

According to the best information obtainable at the time this issue of the *Railway Age* went to press, the United States and Canada will be represented at the International Railway Congress in London from June 22 to July 6 by 53 persons. Every effort has been made to make this list final and complete, but last minute changes in plans may cause some alterations before the Congress actually convenes. Such changes, when they come to the attention of the *Railway Age*, will be duly noted in subsequent issues. The list of those who will attend, as it now stands, is as follows:

- R. B. Abbott, assistant general superintendent, Reading.
- B. T. Anderson, superintendent of signals, Chesapeake & Ohio, representing A. R. A.
- R. N. Begien, vice-president, Hocking Valley.
- W. G. Besler, president, Central of New Jersey, representing A. R. A.
- George L. Bourne, president, Superheater Company, New York.
- B. F. Bush, director, Missouri Pacific, representing A. R. A.
- H. M. Carson, general superintendent, Central Pennsylvania division, Pennsylvania.
- David Francis Crawford, president, Locomotive Stoker Company, government delegate.
- W. C. Cushing, engineer of standards, Pennsylvania, reporter.
- Agnew T. Dice, president, Reading.
- Fayette Dunn, representing the Railway Mechanical Engineer.
- Samuel O. Dunn, editor of the *Railway Age* and consulting administrator of railroad relations of the American Railway Association, representing A. R. A.
- S. M. Felton, president, Chicago Great Western, representing A. R. A.
- H. J. Forster, secretary and treasurer, American Railway Association.
- Edwin B. Gore, executive secretary to vice-president and general manager, Delaware & Hudson.
- William E. Grimshaw, representing the Lehigh Valley.
- Henry C. Hall, Interstate Commerce Commissioner, government delegate.
- W. J. Harahan, president, Hocking Valley.
- F. H. Hardin, chief engineer of motive power and rolling stock, New York Central.
- G. A. Harwood, vice-president, New York Central.
- J. S. Henry, manager, Safety Car Heating & Lighting Company, New York.
- R. A. C. Henry, director, bureau of economics, Canadian National.
- A. L. Humphrey, president, Westinghouse Air Brake Company, government delegate.
- S. J. Hungerford, vice-president, Canadian National.
- F. C. Lavarack, president, Railroad Accessories Corporation, New York.
- Col. J. T. Loree, vice-president and general manager, Delaware & Hudson, reporter.
- E. P. Mallory, director, bureau of statistics, Canadian National.
- Thomas C. McBride, manager, locomotive heater department, Worthington Pump & Machinery Corporation, government delegate.
- Charles H. Muchnic, vice-president, American Locomotive Sales Corporation, government delegate.
- H. E. Newcomet, general superintendent, Lake division, Pennsylvania.
- Frank W. Noxon, secretary, Railway Business Association, government delegate.
- Dr. Julius Parmlee, director, Bureau of Railway Economics, representing A. R. A.
- F. A. Preston, vice-president, P. & M. Company.
- G. I. Ray, chief engineer, Delaware, Lackawanna & Western, reporter.
- J. W. Roberts, general superintendent of transportation, Eastern region, Pennsylvania.
- Donald Rose, European agent, Central of Georgia.
- Walter F. Schleiter, vice-president, Dilworth, Porter & Company, Pittsburgh, government delegate.
- Herman von Schrenk, St. Louis, consulting timber engineer, representing the Nickel Plate.
- L. B. Sherman, assistant consulting administrator of railroad relations, American Railway Association, representing A. R. A.
- Col. Edward A. Simmons, president, Simmons-Boardman Publishing Company, government delegate.
- Harold A. Smith, president, Railway Review, government delegate.
- C. F. Smith, general superintendent of passenger transportation, New York Central.
- Walter S. Thompson, director of publicity, Canadian National.
- Sir Henry W. Thornton, K. B. E., chairman and president, Canadian National.
- Samuel T. Wagner, chief engineer, Reading, reporter.
- Mrs. A. Fenton Walker, representing the Canadian Railway and Marine World.
- G. B. Wall, vice-president, Hocking Valley.
- J. T. Wallis, chief of motor power, Pennsylvania, reporter.
- A. E. Warren, general manager, Western region, Canadian National.
- S. D. Warriner, president, Lehigh & New England.
- Rollin H. Wilbur, vice-president and general manager, Lehigh & New England.
- Albert E. Wilkes, sales manager, Exide Batteries of Canada, Ltd.
- Sidney Withington, electrical engineer, New York, New Haven & Hartford, representing A. R. A.

In addition to these, several officers of the Imperial Japanese Government Railways who are at present resident in the United States will attend. A complete list of the Japanese delegation was published in the *Railway Age* of May 2, page 1076.

Traffic News

The new Chicago Union Station was placed in service on May 15. The formal opening, which will be marked by appropriate ceremonies, will not take place until sometime in July.

The New England railroads have applied to the Interstate Commerce Commission for an order fixing fair and reasonable rates for the transportation of mail for the period from February 25, 1921, to December 13, 1925, in accordance with the commission's order of January 12, 1925.

The general eastern passenger agents' association, New York City, held its annual meeting and luncheon at Hall's Inn, Centerport, Long Island, on Thursday, May 7, with an attendance representing all of the principal railways and steamship lines, about 200 men in all. The president for the ensuing year is G. L. Cobb, general agent of the passenger department of the Chicago, Milwaukee & St. Paul.

The Union Pacific has shortened the schedules of three trains of the Los Angeles-Salt Lake line. The schedule of the Los Angeles Limited operating between Chicago and Los Angeles has been cut 30 min. The Continental Limited will arrive in Los Angeles 45 min. sooner. The California Express operating between Salt Lake City and Los Angeles has had its running time cut 2 hr. 50 min. On May 31 the Denver Special, a summer train of the Union Pacific and the Chicago & North Western will be reinstated and will leave Chicago at 6:05 p. m., arriving in Denver at 8:30 p. m. the following day.

The eastern, southern, and western railroads have filed with the Interstate Commerce Commission a reply to the petition of the International Federation of commercial travelers' organizations, which asked the commission to issue a special order reducing the Pullman surcharge by one-half. This request was based on the averment that four of the commissioners were in favor of abolishing the surcharge and two had said they would have been willing to join in a finding that it should be reduced by one-half. The railroads say that such an order would be in accord with the views of but two members of the commission, and that if the propriety and reasonableness of the surcharge require further consideration, such consideration should be accorded in conjunction with the investigation under the Hoch-Smith resolution.

Court Refuses Damages for Delay to Coal

Frame, Friend & Stineman, coal dealers, who sued the New York, New Haven & Hartford in the county court for \$300,000 damages because of delay in the delivery of coal, at Belle Dock, New Haven, Conn., in the winter of 1922-23 have lost their suit. Judge Isaac Wolfe, after a trial lasting four weeks, deciding all points in favor of the railroad. The plaintiff claimed damages because of lost profits, inability to fulfill contracts for coal sold, and demurrage on their ships (on account of the road preferring its own ships) and the alleged failure of the railroad to operate its Belle Dock unloading plant at maximum capacity, or to equip the dock with modern unloading machinery; also because the road did not use its other dock to help out in the emergency.

The railroad claimed that the unloading facilities which it had provided were adequate for normal years, that it was under no obligation to make a heavy investment to meet the unusual conditions of 1922 and 1923 and that preferential handling of its own coal was not only justified but necessary; that it operated its unloading plant with reasonable expedition, and that this accomplishment was an outstanding achievement in view of the unusual difficulties.

The road contended that under the law the plaintiff should have gone to the Interstate Commerce Commission.

Before the trial the railroad had declined to make any offer of compromise with the plaintiff, maintaining that under the law it could not do so without encountering the danger of discriminating in favor of this plaintiff as against other parties whose ships were delayed.

Commission and Court News

Interstate Commerce Commission

The commission has postponed until September 4 the revised freight rates on iron and steel products from Atlanta, Ga., and points in Alabama and Tennessee, to Mobile, Ala., and New Orleans, La., proposed recently by the carriers.

The commission has announced that, in the interest of clarity and by reason of new information and altered conditions, certain changes or modifications in the regulations for the transportation of explosives and other dangerous articles are desirable, and that a hearing to consider proposed amendments will be held before Director Bartel of its Bureau of Service at Washington on June 10.

State Commissions

The Massachusetts department of Public Utilities, granting the request of the New York, New Haven & Hartford for authority to run special trains from Springfield to New York City on Sunday, May 24 and Sunday, June 7, and dismissing a protest which was entered by the Lord's Day League, says that the policy of the commonwealth, as indicated by its appropriations of money for amusement places used on Sunday, such as those for band concerts and bath houses at beaches, is favorable to Sabbath recreation where the same is not detrimental to the due observance of the Lord's Day and does not interfere with the use of the Sabbath by other persons as a day of rest. To forbid the running of Sunday railroad trains would tend to clog the highways with automobiles.

Court News

Minor Riding on Pass—Exemption from Liability

The Missouri Supreme Court holds that a stipulation in an interstate free pass exempting the railroad company from liability for injuries is valid and a complete defense to an action for the death of the user. The use of such a pass by a minor seeking employment makes the contract one beneficial to the minor and therefore as valid and binding as if he were of full age.—Pinnell v. St. Louis-San Francisco (Mo.) 263 S. W. 182.

Railroad Not Liable for Injury by

Falling Timber Without Proof of Negligence

The Mississippi Supreme Court holds that a brakeman injured by timber sliding off a ramp adjoining a spur track on which he was switching cars was not entitled to a jury trial without showing that the timber was thrown down the ramp by employees of the railroad or that the railroad should have anticipated injury by proximity of the ramps.—N. O. & N. E. v. Venton (Miss.) 100 So. 521.

Limitation of Purpose of Crossing Signal

Where the driver of a buggy stopped 100 ft. from a crossing, and the evidence showed that he was not approaching the crossing, the Kentucky Court of Appeals held that the railroad was not guilty of a breach of duty to the driver although it failed to signal its approach to the crossing, made unnecessary noises at the crossing and operated the train at an excessive speed, and it was not liable for the driver's death caused by the frightening of his horse.—L. & N. (Ky.) 263 S. W. 705.

The same court held that the movement of a flat car carrying a steam shovel was not so unusual or unnecessary as to make the railroad liable for injuries to a rider when his horse was frightened thereby.—Ray v. Big Sandy & Kentucky (Ky.) 263 S. W. 716.

Foreign Railway News

German Railways Doing Well

The German Railway Company, which is operating the railways of the Reich for reparations account under the Dawes plan, is reported to be earning net returns quite in line with estimates and will consequently be able to make all payments required of it by the Reparations Commission.

Guayaquil & Quito May

Be Taken Over by Government

Negotiations are under way looking to the acquisition of the Guayaquil & Quito Railway (Ecuador) by the government. The road is owned by English and American investors and has not been prospering, interest on bonded indebtedness having been in default for 13 years.

The Military Continue to

Interfere with China's Railways

PEKING.

There is a possibility that some portion of the Boxer indemnities whose remission is under consideration by several countries may be devoted to railway construction. The provisional chief executive, Tuan Chi-jui, has declared himself in favor of such use, but articulate China is very closely connected with the professional education class and is opposed. For centuries all of the government officers of China were selected because of their literary attainment.

As a result, a *literatus* not in office was a teacher. This explains the close relations between officialdom and colleges, the interest which college students take in political matters and the consideration which the government always pays to the demands from students.

On March 30 the Peking-Hankow line suffered a head-on collision between a military special and a passenger train just south of Chengchow, the junction with the Lung-Hai line. Soldiers in charge of the military special forced the stationmaster at Chengchow to open switches letting their train on to the main line, although he told them that a passenger train was due. Although only two cars were badly damaged some eight persons were killed, including the drivers of both locomotives.

The Lung-Hai Railway west of the Peking-Hankow line has been restored to traffic after an interruption of more than a week due to the struggle of Hu Ching-yi for possession of Loyang, Wu-Pei-fu's former headquarters. Hu has succeeded in ousting his enemy and as a result the province of Honan appears to be consolidated again with the promise of stable conditions until another general shift in the situation takes place.

Chang Tso-lin, apparently, has revoked his former resolution to consolidate the "outside Wall" section of the Peking-Mukden line with the main stem. The two sections are still being operated separately and the revenues of the "outside Wall" portion are still being remitted to the Mukden headquarters. More important, no interchange of rolling stock, except for two passenger trains each way per day, is permitted between the two sections. This is most conclusive evidence that Chang does not feel his position south of the Great Wall to be secure.

Three sets of negotiations are being carried on with respect to railway finance. The first of these is with the group representing the Banque Industrielle de Chine (not affiliated with the Consortium group) concerning the contract which that interest holds for the construction of a north and south line through the province of Shansi. If the rumored settlement of the "gold franc" question between France and China is correct, the Banque Industrielle will be re-floated as a result, and it is quite possible that the Boxer funds involved in the rehabilitation will be put into the construction of this line. The second set of negotiations is with the creditors of the Peking-Suiyuan line. Under Marshal Feng Yu-hsiang's protection, this line is showing surprising earning powers, but in spite of high revenue it is unable to get ahead due to high interest on short term notes to creditors and native banks. As the

Marshal is very anxious to restore the credit of this line so that certain branches important to his plans can be financed, there is the possibility of some result in that connection. The third group of negotiations are only suspected and concern the 1922 Belgian contract for the extension of the Peking-Suiyuan line from Paotou to Ninghsia. Activities in these bonds on the Brussels market, together with certain comings and goings in Peking are the basis of the rumor.

In spite of the military disturbance on the Shanghai-Nanking line from September on, a preliminary report from that line shows a profit for 1924 above all interest requirements. In December, its operating ratio was the lowest in its history, 33. It appears that the management was forced to cut its train service to the minimum because of stock held by the military, with the result that passengers so crowded the trains that were run as to keep revenues up to nearly normal while operating and maintenance expenses were kept far below normal.

The trouble on the Shantung Railway is by no means over. Although the Ministry of Communications has been forced to acquiesce in the appointment of a military man from that province as managing director, it has not recalled the appointment of H. Y. Hu as assistant managing director. Mr. Hu has never assumed office, due to popular demonstrations against an appointee by the Ministry. Hence, an agitation is being worked up to stop the operation of the line until a Shantung man is actually in place as assistant managing director. The present director is also under fire, because certain of his visits to Peking in connection with administrative matters have brought him under suspicion as to his independence.

The Shantung Railway has been soliciting tenders for eighty all-steel box cars.

Miscellaneous Notes

The Transportation Division of the Bureau of Foreign and Domestic Commerce has received the following reports from its agents abroad:

The Sorocabana Railway wants 350 gondola cars of 30 tons' capacity, with springs and steel mountings complete, including trucks, brakes, and draw bar apparatus, but excluding wooden parts which will be furnished by the railway. Bids were closed on May 15. Further details may be obtained from the Transportation Division.

Tanganyika Concessions are in market for rolling stock and equipment, according to reports. Sellers of such equipment willing to accept railway shares in part payment for their goods may stand a better chance than concerns selling for spot cash only. Interested dealers should address the Tanganyika Concessions at Friars House, New Broad St., London, E. C. 2, England.

Thirty per cent increase in freight rates from Adis Abeba to Djibouti has recently been declared by the owners of the Franco-Ethiopian (Abyssinian) Railway. At the same time, rates were made payable on a gold basis, which is calculated to increase further the cost of shipment.

Reduced rates for visitors to Czechoslovak spas, amounting to from 20 to 66 per cent on return fares, have been offered by the government in order to induce foreigners to visit the health resorts.

A Swedish expert will superintend the reconstruction of the Anatolian Railway at the request of the Chief of the Turkish State Railways.

The Chinese Ministry of Communications will purchase car ferries for the Yangtze river. With this in view, C. C. Wang and Frank Clark will arrive in Seattle May 17 aboard the "President McKinley" and will proceed to New York. After a few weeks in the United States, they will go to Europe. It is suggested that interested manufacturers address any letters for them in care of S. H. Blalock, Bureau of Foreign & Domestic Commerce, 515 Lowman building, Seattle, for delivery on board the "McKinley" immediately upon its arrival.

Contracts for box cars for the Egyptian State Railways have been awarded to the Metropolitan Carriage & Wagon Company of England and the Ringhoffer Works of Czechoslovakia, each company to supply 500.

All railway traffic in Northern Peru continues suspended, due to floods, but has largely been resumed in the south central part of the country, where trains are being operated for a short distance out of Lima. However, two months more will be required to complete the line to Oroyo.

Equipment and Supplies

Locomotives

THE NEW YORK RAPID TRANSIT CORPORATION is inquiring for one or two electric locomotives of about 55 tons.

THE DONORA SOUTHERN has ordered one six-wheel switching locomotive from the Baldwin Locomotive Works.

THE INDIANAPOLIS UNION has ordered one eight-wheel switching locomotive from the Baldwin Locomotive Works.

THE GREAT NORTHERN has ordered 4 electric locomotives from the Westinghouse Electric & Manufacturing Company.

THE MARYLAND & PENNSYLVANIA has ordered one Consolidation type locomotive from the Baldwin Locomotive Works. Inquiry for this equipment was reported in the *Railway Age* of April 25.

THE KANSAS CITY, MEXICO & ORIENT has ordered 5 Decapod type locomotives from the Baldwin Locomotive Works. This company was reported in the *Railway Age* of February 21 as inquiring for 4 Mikado type locomotives.

Freight Cars

THE ANGLO-MEXICAN PETROLEUM COMPANY is inquiring for 25 tank cars of 30 tons capacity.

THE MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE has ordered 42 caboose underframes from the Siems-Stembel Company.

THE MATHIESON ALKALI WORKS has ordered 2, 50-ton, 10,000-gal. tank cars, from the American Car & Foundry Company.

THE NATIONAL REFINERIES COMPANY has ordered 2 underframes for tank cars, from the American Car & Foundry Company.

THE NATIONAL AMMONIA COMPANY has ordered 2 tank cars of 40 tons' capacity, from the American Car & Foundry Company.

THE LONG ISLAND has ordered 20 side and center air dump cars of 40 cu. yd. capacity, from the Goodwin Car & Manufacturing Co., Inc.

THE ILLINOIS TRACTION COMPANY, reported in the *Railway Age* of May 9 as inquiring for from 50 to 100 hopper cars, has ordered 50 from the Mt. Vernon Car & Manufacturing Company.

THE FRUIT GROWERS EXPRESS has ordered 500 steel underframes for refrigerator cars from the Pressed Steel Car Company. Inquiry for 1,200 underframes was reported in the *Railway Age* of April 18.

THE NORFOLK & WESTERN has placed orders for the rebuilding to include new bodies, of 1,000 steel hopper cars with the American Car & Foundry Company and 935 with the Ralston Steel Car Company. Inquiry for this equipment was reported in the *Railway Age* of May 2.

THE NEW YORK RAPID TRANSIT CORPORATION has ordered 2 steel underframe flat cars from the American Car & Foundry Company and 2 steel underframe crane cars from the Differential Car Company. Inquiry for the equipment was reported in the *Railway Age* of March 28.

THE CHICAGO, MILWAUKEE & ST. PAUL has placed contracts for 5,500 freight cars as follows: 500 stock cars from the Illinois Car & Manufacturing Company, 1,000 stock cars from the Standard Steel Car Company, 1,000 box cars from the Pressed Steel Car Company, 1,000 box cars from the Pullman Car & Manufacturing Corp., 1,000 box cars from the Bettendorf Company, 500 automobile cars from the American Car & Foundry Company, and 500 automobile cars from the General American Car Company. Inquiry for this equipment was reported in the *Railway Age* of April 18.

Passenger Cars

THE SOUTHERN PACIFIC has ordered 5 combination steel passenger and baggage cars with smoking compartment, from the American Car & Foundry Co. The cars are to have a total length of 72 ft. 6 in., and are for service on the Southern Pacific lines in Texas and Louisiana. Inquiry for this equipment was reported in the *Railway Age* of March 21.

Iron and Steel

THE ST. LOUIS-SOUTHWESTERN has ordered 1,000 tons of structural steel for oil storage tanks at Eldorado, Ark., from the Chicago Bridge & Iron Works.

THE MICHIGAN CENTRAL has divided an order for 1,120 tons of structural steel between the American Bridge Company and the Bethlehem Steel Corporation.

New York Central Lines Place

Large Order of Rail Supplies

THE NEW YORK CENTRAL has let contracts for 105-lb. rail plates each plate weighing 13 lb., as follows:

	Minimum number of plates	= Tons	Maximum number of plates	= Tons
Bethlehem Steel Corporation.....	300,000	1,950	400,000	2,600
Illinois Steel Company.....	350,000	2,275	550,000	3,575
Jones & Laughlin Steel Company.	350,000	2,275	550,000	3,575
Totals	1,000,000	6,500	1,500,000	9,750

Contracts were also let for 127-lb. rail plates weighing 14 lb. each, to

	Minimum number of plates	= Tons	Maximum number of plates	= Tons
Bethlehem Steel Corporation.....	155,000	1,085	190,000	1,330

Machinery and Tools

THE CANADIAN NATIONAL is inquiring for one 20-ton and one 25-ton locomotive crane.

THE CHESAPEAKE & OHIO is inquiring for one 5-ton and one 10-ton locomotive crane.

THE ATCHISON, TOPEKA & SANTA FE is inquiring for one 4,000-lb. double frame heavy type steam hammer and one motor-driven post drill.

THE CHICAGO, ROCK ISLAND & PACIFIC is inquiring for two woodworking machines, one motor-driven shaftless swing saw and one sash and door clamp.

Track Specialties

THE MISSOURI PACIFIC is inquiring for 630,000 tie plates.

LOCOMOTIVE REPAIR SITUATION

Date, 1924	No. locomotives on line	No. serviceable	No. stored serviceable	No. req. classified repairs	Per cent	No. req. running repairs	Per cent	Total req. repairs	Per cent
February 1	64,377	53,586	4,116	5,919	9.2	4,872	7.6	10,791	16.8
April 1	64,363	52,805	4,648	6,128	9.5	5,430	8.4	11,558	17.9
July 1	64,416	53,382	7,117	6,035	9.4	4,999	7.7	11,034	17.1
October 1	64,538	53,209	5,424	6,175	9.6	5,154	8.0	11,329	17.6
January 1, 1925	64,384	53,118	4,849	5,927	9.2	5,339	8.3	11,266	17.5
February 1	64,308	52,994	4,220	6,143	9.6	5,171	8.0	11,314	17.6
March 1	64,255	52,851	4,988	6,217	9.7	5,187	8.0	11,404	17.7
April 1	64,230	52,619	6,241	6,345	9.9	5,266	8.2	11,611	18.1

Data from Car Service Division reports.

Supply Trade News

The Chicago Fuse Mfg. Co., Chicago, now has a sales office at 2131 Railway Exchange building, St. Louis, Mo. E. M. Miller is in charge of this office.

The Pennsylvania Car Company plans the construction of a structural steel fabricating unit at its plant at Beaumont, Texas, to cost approximately \$90,000.

W. C. Miner, general sales manager of the Railway Service & Supply Corporation, has removed his headquarters to Indianapolis, Ind., and the Chicago office has been closed.

George W. Daves, formerly business manager of Railway Signaling, has been appointed sales engineer of the Milwaukee Tank Works, Milwaukee, Wis., with headquarters in Chicago.

C. P. Wright, assistant vice-president of the American Brake Shoe & Foundry Company, with headquarters in Chicago, has been promoted to vice-president, with the same headquarters. He was born in Garrett, Ind., on September 12, 1880, and after graduating from high school entered railway service with the Baltimore & Ohio. A year later he entered the employ of the Ansonia Clock Company in Chicago and later the employ of the Chicago Grain Door Company, with the same headquarters. On August 1, 1900, he entered the employ of the Featherstone Foundry & Machine Company which was absorbed by the American Brake Shoe & Foundry Company. During the past 7 years of his employ with the American Brake Shoe & Foundry Company he has been assistant to the vice-president and assistant vice-president at Chicago.

The Locomotive Stoker Company has acquired from the Elvin Mechanical Stoker Company the exclusive patent rights covering the Elvin shovel type stokers heretofore sold by that

company and with their ample facilities for manufacturing stoker equipment for locomotives they are now in a position to supply either the duplex or the shovel type as may be preferred.

The Timken Roller Bearing Company, Canton, Ohio, has bought the physical assets of The Gilliam Manufacturing Company; the production of both Timken bearings and Gilliam bearings will be continued in their respective plants.

The Detweiler-Bell Company, 101 Milk street, Boston, Mass., and 152 Temple street, New Haven, Conn., has been appointed representative in the New England states for the Roller-Smith Company, New York. Paul G. Detweiler is in charge of the New Haven office and R. H. McCormick is in charge of the Boston office. The Detweiler-Bell Company succeeds Walter W. Gaskill, who has been representing the Roller-Smith Company in the New England territory for several years.

H. P. Rodgers, Leader building, Cleveland, Ohio, will in the future handle the sale in Ohio of the American mono-rail cable conveyor for the Conveyors Corporation of America, Chicago. Eugene Smith, formerly with the Galion Iron Works, will be associated with Mr. Rodgers in the sale of this equipment. E. A. Grimmer has joined the sales organization of the Lathrop-Trotter Company, Cincinnati, district representatives of the Conveyors Corporation of America. Mr. Grimmer was until recently with the sales force of the Elliott Company of Cincinnati.

April Shipments of Locomotives

The Department of Commerce has made public its monthly compilation of locomotive shipments—for April, 1925—of shipments of locomotives from principal manufacturing establishments, compared with previous months. The table follows:

Year and Month	Shipments			Unfilled orders end of month		
	Total	Domestic	Foreign	Total	Domestic	Foreign
1923						
January	229	217	12	1,788	1,699	89
February	207	196	11	2,220	2,141	79
March	282	269	13	2,316	2,214	102
April	217	201	16	2,204	2,111	93
Total	935	893	52	....	....	....
1924						
January	151	147	4	376	344	32
February	99	92	7	499	466	33
March	132	128	4	534	494	40
April	73	63	10	640	586	54
Total	455	430	25	....	....	....
1925						
January	90	45	45	407	351	56
February	85	73	12	397	343	54
March	109	93	16	447	351	96
April	92	82	10	477	362	115
Total	376	293	83	....	....	....



C. P. Wright



One of the Pennsylvania's Named Freight Trains

Railway Construction

ANN ARBOR.—This company has awarded a contract to Roberts & Schaefer Company, Chicago, for the construction of a 400-ton two-track coaling station at Frankfort, Mich.

ATCHISON, TOPEKA & SANTA FE.—A contract has been awarded to Sharp & Fellows, Los Angeles, Cal., for the construction of a 65-mile branch line from Doud, Texas, west to the Texas-New Mexico state line, the plans for which were reported in the *Railway Age* of February 7.

CHESAPEAKE & OHIO.—This company has applied to the Interstate Commerce Commission for authority for the construction and operation of an extension of its Logan division from Gilbert to Mullens, W. Va., 47.3 miles, and an extension of its Winding Gulf branch from Stone Coal to Mullens, 8.2 miles.

CHESAPEAKE & OHIO.—The following improvements have been authorized:

Russell, Ky.:

Replace 150-ton track scale on new hump with 400-ton plate fulcrum scale	\$36,100
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Replace 150-ton track scale on south side of old hump with 400-ton plate fulcrum scale and raise tracks and other scale on old hump two feet.....	\$41,400
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Seth, W. Va.:

Passing siding to hold 110 cars.....	\$65,600
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LOUISVILLE & NASHVILLE.—This company has applied to the Interstate Commerce Commission for an extension of time to December 31, 1925, in which to file its application for a certificate for the construction of the proposed connections between its McRoberts line and its Harlan county branch and the Carolina, Clinchfield & Ohio, which was one of the conditions on which the commission authorized the acquisition by the Atlantic Coast Line and the Louisville & Nashville of control of the C. C. & O. The company states that it has made many surveys and estimates but requires additional time in which to make additional surveys before reaching a decision among several alternate routes.

MINNEAPOLIS & ST. LOUIS.—It is reported that this company is planning the construction of shop facilities at Minneapolis, Minn.

NEW YORK CENTRAL.—Plans for the electrification of the main line of the company's Putnam division from its terminus at Sedgwick avenue, the Bronx, New York, northward to the junction of the Yonkers branch and the Yonkers branch itself, were approved by an order of the Public Service Commission of New York on May 6. The protected type of under-running third rail will be used. Power will be supplied from the substations at Mott Haven, Marble Hill and Glenwood. Plans and specifications for the proposed work must be presented for approval before any of the actual work has begun. The commission has also directed the railroad to file by July 1 detailed plans for the electrification of the main line of the Putnam division and the Saw Mill River branch, north of the Yonkers branch.

NEW YORK, NEW HAVEN & HARTFORD.—A contract has been awarded to the Lathrop & Shea Company, New Haven, for the

elimination of a grade crossing at Bridge street, Middletown, Conn., to cost approximately \$228,400.

NEW YORK, NEW HAVEN & HARTFORD.—Revision of and additions to this company's freight terminal at Hartford, Conn., have been authorized, to cost approximately \$300,000. At the present time these facilities are divided between two locations some distance apart. The improvements will provide complete facilities in one location, i. e. at East Hartford, and will include receiving and forwarding tracks, a classification yard of 19 tracks served by a hump, bad order tracks, etc.

OREGON SHORT LINE.—Company forces are constructing an 84-ft. by 96-ft. four-stall, frame enginehouse and a 16-ft. by 24-ft. oil and engine supply house at Twin Falls, Idaho.

OREGON TRUNK.—This company has applied to the Interstate Commerce Commission for a certificate authorizing the construction of an extension from Bend to Klamath Falls, Ore., 170 miles, and another line from a connection with it at a point 65 miles from Bend in a southwesterly and southerly direction to Klamath Falls, 80 miles.

READING.—Contracts have been awarded to the following covering the construction of a bridge over a state highway south of Pottsville, Pa.: Bennett-Randall Co., Lebanon, Pa., substructure; McClintic-Marshall Co., Philadelphia, Pa., superstructure; and to the Benjamin Foster Co., Philadelphia, Pa., waterproofing.

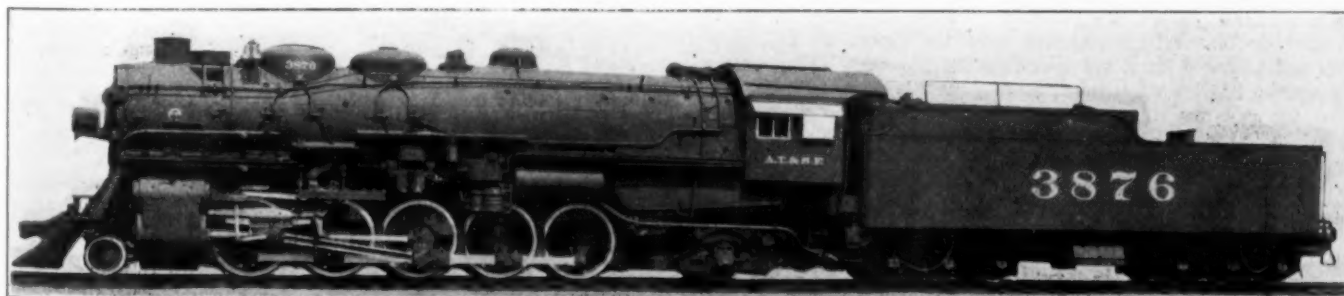
SAN ANTONIO & ARANSAS PASS.—The company has applied to the Interstate Commerce Commission for a certificate authorizing the construction of an extension from Falfurrias, Tex., to the international boundary line at a crossing of the Rio Grande river, 90 miles.

SOUTHERN PACIFIC.—A contract has been awarded to W. H. Nichols & Company, Dallas, Texas, for the construction of a rail and ship terminal at Houston, Texas, plans for which were reported in the *Railway Age* of October 25, 1924. The terminal will include wharves, a warehouse and several transfer sheds.

ST. JOHN & QUEBEC.—A bill has been given its third reading in the House of Commons at Ottawa extending by two years the time within which this line must be completed. This is a line in the province of New Brunswick built by the government of that province and operated by the Canadian National.

WACO, BEAUMONT, TRINITY & SABINE.—The Texas Railroad Commission has granted authority for the amendment of the charter for this company to provide for the construction of an extension from Livingston, Texas, to Beaumont, and thence to Port Arthur. Authority has also been granted for the purchase of the Trinity & Sabine and the Gulf, Beaumont & Great Northern with which the proposed extension will connect.

THE PERE MARQUETTE is distributing a bulletin on the automatic train control question denying that "the railways are opposing the installation of devices to save lives." It is stated that train control is still in development and that the railways will welcome it when this development has been consummated. Meanwhile, the bulletin points out that the life of an individual riding on the railways is infinitely safer than that of the average individual on the streets of Detroit, Mich., for the total number of fatalities to passengers on American railroads each year is less than Detroit's record of fatal accidents in that period.



2-10-2 Type Locomotive Built by the Baldwin Locomotive Works for the Santa Fe

Railway Financial News

ATCHISON, TOPEKA & SANTA FE.—Bonds of Subsidiary Companies. Additional authorizations have been granted to subsidiary companies to issue bonds to be delivered to the parent company in satisfaction of indebtedness for advances for capital purposes. Buffalo & Northwestern, a general mortgage, 6 per cent bond, Series A, \$1,200,000; Dodge City & Cimarron Valley, a first mortgage, 6 per cent bond, \$3,100,000; Salina & Santa Fe, a first mortgage, 6 per cent bond, \$579,000; Concho, San Saba & Llano Valley, a first mortgage 6 per cent bond, \$615,000.

Asks Authority to Issue Bonds.—The Santa Fe & Los Angeles Harbor has applied to the Railroad Commission of California for permission to issue one first mortgage gold bond of \$1,600,000 to be delivered to the Atchison, Topeka & Santa Fe in settlement of construction expenses. The Santa Fe constructed the harbor extension for the Santa Fe & Los Angeles Harbor, from Los Angeles to a connection with a harbor belt line, and will operate it under lease.

BOSTON & MAINE.—New Director. Frank D. True, of Portland, Me., has been elected a director succeeding Norman L. Bassett, of Augusta, Me., who recently resigned because of his appointment as associate justice of the Maine Supreme Judicial Court.

BUFFALO & SUSQUEHANNA.—1924 Earnings. Annual report for 1924 shows net income of \$255,856 as compared with \$807,919 in 1923. Selected items from the income statement follow:

BUFFALO & SUSQUEHANNA			
	1924	1923	Increase or decrease
Average mileage operated.....	254	254	
Railway operating revenues..	\$1,914,201	\$2,780,877	—\$866,675
Total operating expenses.....	\$1,941,348	\$2,652,044	—\$710,697
Net revenue from operations	Def. \$27,146	\$128,833	—\$155,979
Railway tax accruals.....	\$43,747	\$147,990	—\$104,243
Railway operating income.....	Def. \$71,029	Def. \$19,159	—\$51,870
Hire of freight cars: Cr. bal.	\$363,162	\$610,091	—\$263,173
Net railway operating income..		(Not shown)	
Non-operating income.....	\$628,974	\$1,127,923	—\$498,949
Gross income	\$557,945	\$1,108,764	—\$550,819
Interest on funded debt...	\$200,546	\$218,683	—\$18,137
Total deductions from gross income	\$239,016	\$255,899	—\$16,883
Net income	\$318,930	\$852,866	—\$533,936
Income applied to sinking fund	\$63,074	\$44,947	—\$18,127
Surplus for year carried to profit and loss.....	\$255,856	\$807,919	—\$552,063

CENTRAL OF GEORGIA.—Bonds.—This company has applied to the Interstate Commerce Commission for authority for the conditional issue of \$3,400,000 of refunding and general mortgage 5½ per cent bonds to reimburse the treasury for expenditures for additions and betterments and to be held in the treasury for the present.

CHESAPEAKE & OHIO.—1924 Earnings. See excerpts from annual report appearing on adjacent pages.

CHESAPEAKE & OHIO.—Tentative Valuation.—The Interstate Commerce Commission's tentative valuation report on this company and affiliated lines, not including the Hocking Valley or the Chesapeake & Ohio of Indiana, as of June 30, 1916, shows a final value for rate-making purposes of \$182,687,175 for the property owned and \$189,257,789 for the property used, including \$3,994,800 for working capital including materials and supplies. The outstanding capitalization as of valuation date was \$244,770,143, including \$62,784,800 of stock and \$181,985,343 funded debt. The investment in road and equipment, including land, was stated in the books as \$213,130,013. With readjustments required by the commission's accounting examinations, the report says, this would be reduced to \$195,998,669, of which \$122,238,609, less an undetermined portion thereof assignable to offsetting items recorded at \$8,409,805, rep-

resents considerations other than money, the cash value of which the commission is unable to report. The cost of reproduction new is reported as \$196,596,517 for the owned property and \$202,153,901 for the used property, and the cost of reproduction less depreciation as \$155,992,355 for the owned and \$160,198,429 for the used property. A total of 25,251 acres of carrier lands owned is given a present value of \$11,852,006, and 9,873 acres of non-carrier lands owned are give a present value of \$1,164,046. The company owned securities of other companies, classified as held for non-carrier purposes, of a par value of \$78,420,648 and a book value of \$33,838,485. It also held cash and materials and supplies in the amount of \$11,281,957. The report covers the properties of the Chesapeake & Ohio, Norfolk Terminal, Covington & Cincinnati, Gauley & Meadow River, Elkhorn & Beaver Valley, Island Creek, Logan & Southern and Cincinnati Inter-Terminal.

CHICAGO & ALTON.—1924 Earnings.—Annual report for 1924 shows net deficit after allowances for interest of \$1,035,242 as compared with net income in 1923 of \$1,117,145. Selected items from the income statement follow:

CHICAGO & ALTON			
	1924	1923	Increase or decrease
Average mileage operated.....	1,051	1,050	1
Railway operating revenues.....	\$30,854,030	\$33,588,194	—\$2,734,164
Maintenance of way.....	\$4,169,311	\$4,558,105	—\$388,794
Maintenance of equipment.....	7,011,157	8,102,878	—1,091,721
Transportation	11,325,216	11,393,592	—68,376
Total operating expenses.....	\$23,893,469	\$25,389,228	—\$1,495,759
Operating ratio	77.44	75.59	1.85
Net revenue from operations.....	\$6,950,561	\$8,198,965	—\$1,238,405
Railway tax accruals.....	1,243,085	1,275,521	—32,437
Railway operating income.....	\$5,712,654	\$6,914,832	—\$1,202,178
Equipment rents, dr.....	\$905,519	\$1,181,646	—\$276,127
Joint facility rents, dr.....	412,342	413,618	—1,276
Net railway operating income.....	\$4,394,793	\$5,319,568	—\$924,773
Net income from railroad properties.	\$3,645,776	\$5,416,318	—\$1,770,541
Other income	86,713	124,697	—37,985
Gross income	\$3,732,489	\$5,541,015	—\$1,808,526
Interest on funded debt.....	\$3,629,522	\$3,359,814	\$269,708
Total deductions from gross income.	\$4,767,731	\$4,423,870	\$343,861
Net income	Def. \$1,035,242	\$1,117,145	—\$2,152,387

CHICAGO & NORTH WESTERN.—1924 Earnings. See article on another page in this issue entitled "North Western Reports Poor Earnings" and excerpts from annual report appearing on adjacent pages.

CHICAGO, ROCK ISLAND & PACIFIC.—Relations with Southern Pacific. At the annual meeting of the Rock Island, President J. E. Gorman referred to the possibilities of a merger with the Southern Pacific as follows:

"There has been much talk of such a consolidation and the managements of both systems have contended for some time it would be logical. Should it come, the Rock Island would be a great beneficiary. I have tried for some time to effect a stronger operating arrangement with the Southern Pacific and I have hopes that after June 1, when the jurisdiction of such matters on that line is changed, it may be done. At present we are giving all our business to the Southern Pacific because it is logical, owing to the long haul we get. In return we get only the perishable freight requiring fast service. On other heavier merchandise the Southern Pacific can get a longer haul by handling it through other connections.

"I have tried to convince the Southern Pacific that by giving faster delivery over our lines and thereby according better service to their customers they would profit in the long run, but they have been slow to accept this viewpoint. I hope that when the final word is given to another executive June 1 the arrangement can be made."

Mr. Gorman said further:

"The prospects this year depend entirely upon the crop situation. Crops mean more to the Rock Island than to any other railroad. The general average of revenues from farm products in the western territory is something like 26 per cent of their total, while on the Rock Island it runs as high as 42 per cent."

"Railroads like ours could not live if rates on farm products were reduced, unless rates on other commodities were advanced accordingly. It is my contention that this could not be done," he said.

CHICAGO, ST. PAUL, MINNEAPOLIS & OMAHA.—1924 Earnings.—Due to a transposition of certain figures whereby part of the 1924 figures appeared in the 1923 column and vice versa, the income statement of the Chicago, St. Paul, Minneapolis & Omaha was given incorrectly in last week's issue of the *Railway Age*. The statement given correctly follows:

CHICAGO, ST. PAUL, MINNEAPOLIS & OMAHA

	1924	1923	Increase or decrease
Average mileage operated.....	1,749.19	1,749.19	
Railway operating revenues...	\$27,915,736	\$28,363,234	—\$447,498
Maintenance of way.....	\$3,717,699	\$3,653,661	\$64,037
Maintenance of equipment.....	5,074,994	5,678,518	—603,524
Transportation	12,037,511	12,818,667	—781,156
Total operating expenses.....	\$22,189,824	\$23,516,147	—\$1,326,324
Net revenue from operations...	\$5,725,913	\$4,847,087	\$878,826
Railway tax accruals.....	1,615,940	1,598,503	17,436
Railway operating income.....	\$4,096,901	\$3,236,381	\$860,520
Equipment and joint facility rents, net dr.....	\$687,912	\$207,466	\$480,446
Net railway operating income...	\$3,408,989	\$3,028,915	\$380,074
Non-operating income.....	251,062	237,706	13,356
Gross income	\$3,660,051	\$3,266,621	\$393,430
Interest on funded debt...	\$2,578,398	\$2,602,156	—\$23,758
Total deductions from gross income	\$2,623,143	\$2,642,448	—\$19,306
Net income	\$1,036,908	\$624,173	\$412,735
Disposition of net income:			
Divs. on pref. stock 7% in 1923 and 5% in 1924.....	\$562,965	\$788,151	—\$225,186
Divs. on com. stock 2½% in 1923		463,918	—463,918
Surplus for year carried to profit and loss.....	\$473,943	Def. \$627,896	\$1,101,839

See article on another page of this issue entitled "North Western Reports Poor Earnings" and excerpts from annual report appearing on adjacent pages.

DELAWARE & HUDSON.—*Stockholders Approve Coal Segregation.* Stockholders at their annual meeting in New York on May 12 authorized the board of managers to proceed with plans for the segregation of the company's coal properties. By this authority the board of managers, when in its view it is desirable and advantageous so to do, may "transfer to a corporation or corporations, all of whose stock shall be owned by the Delaware & Hudson Company, all or any anthracite lands and interests therein belonging to it or controlled by it pertaining to the mining, preparation and marketing of anthracite, including stock of subsidiary companies owning properties of that nature, for such consideration in the form of bonds, stocks, or other securities . . . as the board of managers may deem adequate and advantageous."

President L. F. Lorce declined to answer inquiries of a dissenting stockholder, representing 40 shares of stock, regarding the precise amount of assets involved in the proposed transfer of the coal lands. He said, however, that the conveyance would apply to virtually all the properties of the subsidiary coal companies, including the Hudson Coal Company, the Northern Coal & Iron Company and the Delaware & Hudson coal department. He added, that roughly one-half of the \$54,193,000 carried in the balance sheet of the Delaware & Hudson as "investments in affiliated companies" would be affected. He pointed out further that segregation was for the purpose of increasing the flexibility of the company's position and was similar to steps taken by other companies. He declined to answer questions regarding the bearing the coal segregation had upon possible consolidation plans.

DULUTH & IRON RANGE.—1924 *Earnings.* Annual report for 1924 shows net after charges of \$1,349,675 as compared with \$1,584,962 in 1923. Selected items from the income statement follow:

	1924	1923	Increase or decrease
Railway operating revenues...	\$5,960,971	\$7,768,817	—\$1,807,847
Total operating expenses.....	\$4,897,606	\$5,448,117	—\$550,511
Operating ratio	82.16	70.13	12.03
Net revenue from operations...	\$1,063,365	\$2,320,701	—\$1,257,336
Railway tax accruals.....	808,800	609,440	199,360
Railway operating income.....	\$254,380	\$1,709,953	—\$1,455,573
Net railway operating income...		(Not shown)	
Gross income	\$678,002	\$2,212,974	—\$1,534,972
Interest on funded debt...	\$407,550	\$407,550	
Miscellaneous income charges, Cr.....	1,254,447	Dr. 6.	—\$1,254,453

Total deductions from gross income	Cr. \$671,673	Dr. \$628,012	—\$1,299,686
Net income	\$1,349,675	\$1,584,962	—\$235,287
Income applied to sinking and other reserve funds—adjustment, Cr.	\$1,254,447		—\$1,254,447
Balance of net income.....	\$2,604,122	\$1,584,962	\$1,019,160

DULUTH, MISSABE & NORTHERN.—1924 *Earnings.* Annual report for 1924 shows net income after charges of \$3,674,198 as compared with \$10,195,983 in 1923. Selected items from the income statement follow:

	1924	1923	Increase or decrease
Railway operating revenues....	\$13,856,099	\$22,253,554	—\$8,397,455
Total operating expenses.....	\$7,507,186	\$9,097,748	—\$1,590,562
Operating ratio	54.18	40.88	13.30
Net revenue from operations...	\$6,348,913	\$13,155,806	—\$6,806,893
Railway tax accruals.....	2,491,309	2,479,572	11,737
Railway operating income.....	\$3,857,198	\$10,676,232	—\$6,819,033
Net railway operating income...		(Not shown)	
Gross income	\$4,645,223	\$11,324,124	—\$6,678,901
Rent for leased roads.....	\$202,482	\$200,020	\$2,463
Interest on funded debt...	421,469	447,883	—26,414
Total deductions from gross income	\$971,024	\$1,128,141	—\$157,116
Net income	\$3,674,199	\$10,195,983	—\$6,521,785

FLORIDA EAST COAST.—*Authorized to Issue Bonds.*—The Interstate Commerce Commission has granted authority to this company to issue \$15,000,000 first and refunding mortgage 5 per cent bonds, Series A, to be sold to J. P. Morgan & Co. at not less than 91½ per cent of par and accrued interest.

Bonds Sold.—J. P. Morgan & Co., the First National Bank and the National City Company offered on May 12, \$15,000,000 first and refunding mortgage 5 per cent bonds, Series A, due September 1, 1974, at a price of 94¼ and accrued interest to yield 5.30 per cent.

The entire proceeds of these bonds are to be applied to a comprehensive program for the improvement of the company's property, including the construction of a 29-mile double track cut-off on the main line between St. Augustine and Bunnell, and approximately 93 miles of new second main track. This new construction will complete the double-tracking of 184 miles of the main line and, it is estimated, will increase the carrying capacity of the line by at least 150 per cent.

The first and refunding mortgage is a direct first lien on 194 miles of road (including 12 miles under construction), and a second lien on 616 miles, subject only to \$12,000,000 first (closed) mortgage 4½ per cent bonds. The mortgage will also be a first lien on the new 29 mile cut-off, making the total mileage under the mortgage 839 miles, of which 223 miles will be covered as a first lien.

1924 Earnings.—Annual report for 1924 shows net income after charges of \$3,517,492, equivalent to \$9.38 per share on \$37,500,000 outstanding common stock. Net in 1923 was \$2,757,673, equivalent to \$22.05 per share on \$12,500,000 stock outstanding. Selected items from the income statement follow:

	1924	1923	Increase or decrease
Average mileage operated.....	763.01	764.52	
Railway operating revenues.....	\$20,106,916	\$16,023,998	\$4,082,918
Maintenance of way.....	\$2,976,212	\$2,570,184	\$406,028
Maintenance of equipment.....	3,060,187	2,662,824	397,363
Transportation	6,478,866	4,881,988	1,596,878
Total operating expenses.....	\$13,270,096	\$10,771,330	\$2,498,766
Operating ratio	66.00	67.22	—1.22
Net revenue from operations.....	\$6,836,815	\$5,252,668	\$1,584,146
Railway tax accruals.....	1,318,892	1,352,468	—33,576
Railway operating income.....	\$5,511,463	\$3,896,031	\$1,615,433
Net railway operating income.....		(Not shown)	
Non-operating income	\$417,586	\$475,602	—\$58,015
Gross income	\$5,929,050	\$4,371,632	\$1,557,417
Interest on funded debt.....	\$869,219	\$609,889	\$259,330
Total deductions from gross income.....	\$2,411,558	\$1,613,959	\$797,598
Net income	\$3,517,492	\$2,757,673	\$759,819

GRAND TRUNK OF CANADA.—*Valuation.*—The Interstate Commerce Commission has issued a tentative valuation report in which the final value of the property in the United States owned is given (Continued on page 1250)

Annual Report

Chicago and North Western Railway Company—Sixty-Fifth Annual Report

Report of the Board of Directors

To the Stockholders of the Chicago and North Western Railway Company:

The Board of Directors submits herewith its report of the operations and affairs of the Company for the year ending December 31, 1924.

Average mileage of road operated, 8,462.83.	
OPERATING REVENUES:	
Freight	\$103,516,754.39
Passenger	28,872,654.95
Other Transportation	14,248,012.04
Incidental	2,817,162.37
	<hr/>
OPERATING EXPENSES (80.65 per cent of Operating Revenues)	\$149,454,583.75
	<hr/>
Net Revenue from Railway Operations.....	\$28,917,938.67
RAILWAY TAX ACCRUALS (6.26 per cent of Operating Revenues)	\$9,348,841.71
UNCOLLECTIBLE RAILWAY REVENUES.....	63,521.45
	<hr/>
	9,412,363.16
Railway Operating Income.....	\$19,505,575.51
EQUIPMENT AND JOINT FACILITY RENTS—Net Debit.....	2,721,524.65
	<hr/>
Net Railway Operating Income.....	\$16,784,050.86
NONOPERATING INCOME:	
Rental Income	\$866,535.69
Dividend Income	1,977,534.00
Income from Funded Securities.....	17,735.33
Income from Unfunded Securities and Accounts, and Other Items.....	575,522.26
	<hr/>
	3,437,327.28
Gross Income	\$20,221,378.14
DEDUCTIONS FROM GROSS INCOME:	
Rental Payments	\$19,031.49
Interest on Funded Debt.....	12,333,590.57
Other Deductions	197,431.91
	<hr/>
	12,550,053.97
Net Income	\$7,671,324.17
DIVIDENDS:	
7% on Preferred Stock.....	\$1,567,650.00
4% on Common Stock.....	5,806,100.00
	<hr/>
	7,373,750.00
Balance Income for the Year.....	\$297,574.17

General Remarks

FREIGHT BUSINESS

During the year your Company handled 8,290,312,710 tons of revenue freight one mile. This was a decrease of 10.36 per cent from the revenue freight tons one mile handled in 1923. The gross revenue received from freight business in 1924 was 8.5 per cent less than the revenue received in the year 1923.

PASSENGER TRAFFIC

The gross revenues from passenger traffic were 6 per cent less than the revenues from the same class of traffic in 1923. The increased use of the motor vehicle has made serious inroads upon short haul passenger traffic. It is interesting to note that since 1916 the number of intra-state passengers has decreased 50 per cent, and that during the same period the number of registered motor vehicles in the nine states in which your Company operates has increased by 158 per cent. The management has made every effort to develop the long haul passenger business, with the result that the decrease in number of passengers carried has been offset to some extent by an increase in the average distance traveled by each passenger.

Notwithstanding the efforts to increase long haul passenger business, it remains true that the motor vehicle has made serious inroads upon gross passenger revenues, and consequently upon the net from this class of business.

The figures given above are exclusive of commutation passengers.

GENERAL BUSINESS

All business combined in 1924 produced a gross revenue of 6.84 per cent less than in 1923. To meet this situation, however, operating expenses were reduced 9.03 per cent, with the result that net revenues from railroad operation were increased 3.58 per cent.

By reference to the Comparative Statement of Income Account shown on page 32 (of the pamphlet report) it will be observed that the surplus, after all fixed charges, including dividends, in the year 1924 was less than in 1923, due largely to (a) increase in taxes, (b) decrease in non-operating income, and (c) increase in interest on funded debt.

TAXES

Taxes have become a very serious burden upon all railroad companies. In 1924 the taxes of your Company consumed 6.26 per cent of operating revenues. In 1913, the year before the outbreak of the World War, your Company paid in taxes \$3,765,159.80. In 1924 taxes amounted to \$9,348,841.71. Your officers have felt that your railway property has been unjustly discriminated against in the matter of assessed valuations in several of the states, and on this account has appealed to the courts where the validity of such valuations has been drawn into question.

Studies taken from the census reports show that with the exception of electric railways, steam railroads pay the largest percentage of their net income for taxes as compared with any other class of industry or business, including that of agriculture.

Another growing burden is that of taxes levied by way of special assessments for municipal, county and state improvements. These have increased almost 300 per cent during the last eight years.

COST OF LABOR

During the year all the railroads in the United States granted increases in rates of compensation to various classes of employees, with the result that the total annual wage increase to your Company will be approximately two million dollars. Wages now stand at 57 per cent above the wage level as paid by your Company in 1917, the year preceding Federal Control.

FREIGHT RATES

With increases in general taxes of approximately 200 per cent since 1913, the year immediately preceding the outbreak of the World War, and in special assessments of 300 per cent, and in wages of 57 per cent since 1917, the year preceding Federal Control of railroads, and with the average cost of materials and supplies far above pre-war levels, it is important that our stockholders give consideration to the general level of freight rates in the territory in which this Company operates as compared with rates during the pre-war period.

For the United States as a whole, the average freight rate per ton per mile in 1924 was 51 per cent higher than in 1911, and 56 per cent higher than in 1917. In the Western District, however, in which your Company operates, the average rate per ton per mile in 1924 was only 29 per cent higher than in 1911 and 46 per cent higher than in 1917, while in the Eastern District the average rate per ton per mile in 1924 was 77 per cent higher than in 1911 and 70 per cent higher than in 1917, and in the Southern District the average rate per ton per mile in 1924 was 38 per cent higher than in 1911 and 50 per cent higher than in 1917.

In 1920 the Interstate Commerce Commission, in the case known as Ex Parte 74, granted increases in rates which were stated as producing increases of 35 per cent in the Western District, 40 per cent in the Eastern District and 33½ per cent as between districts. The actual result, however, was to grant an increase in the Western District which amounted to only 29.5 per cent, and in the Eastern District of 36 per cent. This increase in rates was immediately followed by a series of reductions, as follows:

January 1, 1922, reductions on all grain and grain products and live stock, averaging 18 per cent.

June 19, 1922, reduction of 10 per cent on iron ore and all classes of traffic not included in the grain and live stock reductions of January 1, 1922.

May 15, 1923, additional reduction of 9 cents per ton on iron ore. The result of these reductions in rates during the years 1922 and 1923 applied to traffic actually moved during the years 1923 and 1924, reduced the revenues of your Company as follows:

1923	\$16,059,389.92
1924	14,477,314.28

In addition to the foregoing, the Interstate Commerce Commission in 1924 issued an order reducing the express rates in the Western District, effective March 1, 1925, which will be directly reflected in the gross revenues of your Company.

After giving effect to the various reductions that have taken place since 1921, we find that the net result is to leave rates in the Eastern District 23 per cent higher than the rates as they existed prior to the increase in 1920, and in the Western District but 10 per cent higher. When the Western District, however, is divided as between the roads composing Western Trunk Lines and located in the Northwestern Region, and the roads in the

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Southwestern Group, we find that those in the Northwestern Group are on an abnormally low basis. The average rate per ton per mile in the Southwestern Group is approximately 1.364 cents, while for those in the Northwestern Region, which are exclusively in the Western Trunk Line Group and which include the mileage of your Company, the average rate in 1924 was only 1.12 cents per ton per mile. This unequal treatment with relation to freight rates is reflected in the average returns of the railroads in the various districts.

For the United States as a whole, the average return for the year 1924 was 4.35 per cent. In the Eastern District it was 4.58 per cent; in the Southern District it was 5.20 per cent, and in the Western District it was 3.87 per cent.

Your officers, in common with those representing other carriers in this territory, have heretofore and are now exerting every effort with those regulatory bodies clothed with the authority of making rates, to correct this abnormal situation, but the matter is set forth somewhat in detail herein so that our stockholders may be fully advised in the premises. It is important that every stockholder should realize that, notwithstanding the great increase in "railroad cost of living," as hereinbefore explained, average rates per ton per mile in this Western District are only 29 per cent higher than they were in 1911, and only 10 per cent higher than they were prior to the general increases granted in 1920.

In the interest of the public, dependent in large measure for its prosperity upon efficient transportation, as well as in the interest of the owners of railway securities, it is imperative that there be no further reductions in rates, but that, on the contrary, increases be granted, to the end that railway credit be sustained and progressive railway improvement and development be permitted to go forward.

NEW EQUIPMENT

During the year arrangements were made for the construction and acquisition of the following new equipment:

Passenger Equipment:

- 24 Steel Vestibule Passenger Coaches.
- 23 Steel Baggage Cars.
- 3 Steel Combination Baggage and Mail Cars.

Freight Equipment:

- 1,000 Box Cars.
- 1,000 Automobile Cars.
- 500 Stock Cars.
- 500 Flat Cars.
- 200 Refrigerator Cars.

These cars were purchased for delivery in 1925, the freight cars to be delivered by March 31st and the passenger cars by June 30th. All of this equipment is to be of modern type in every particular and of large capacity and will be sufficient to fully offset all retirements of old equipment that have been made since the last previous acquisition of new equipment.

GENERAL

Maintenance of way was continued during the year on the basis of expending the full amount essential to maintain the property in first class condition.

In the aggregate, a total of 3,051,507 new track ties were inserted in the replacement of old ties removed. The larger proportion of these were treated, the balance being white oak and cedar.

New rail totaling 46,000 tons was put into the main track in renewal of worn rail. Most of this rail was of 90 and 100-lb. section and replaced rail of lighter weight which in turn was re-laid in branch lines and sidings, releasing older and lighter rail which had become worn out.

Bridges and structures were adequately maintained. As shown elsewhere, replacements of temporary structures with permanent work was continued. Maintenance expenditures on equipment were reduced proportionally with the smaller requirements of the year due to less business and less use of locomotives and cars.

PENSIONS

During the year, 169 employees and officers were retired from active service and granted pensions by the Company. Of these retirements, 79 were on account of employees having reached the age of seventy and 90 were on account of employees having suffered permanent physical disability.

On December 31st, 1924, there were 1,347 retired employees receiving pensions. The average monthly pension in force on that date was \$38.34. The amount paid in pensions during the year was \$594,011.82, an increase of \$55,906.10 over the amount paid in 1923.

Since January 1st, 1901, the effective date of the Pension System, pension payments made by the Company have amounted to \$5,868,474.21.

FEDERAL VALUATION

No important development has occurred during the year, in the matter of valuation of your Company's property by the Interstate Commerce Commission. The Bureau of Valuation is continuing its work but owing to reductions that have been made in the personnel of this department of the Commission, as well as to the concentration of its efforts upon the work of completing valuations

of the properties of other railroads whose earnings are thought to be subject to recapture, considerably less progress was made last year than was made in the years prior thereto. The work of the bureau on the valuation of your property requires continued co-operation on the part of your Company.

Under a provision of the Valuation Law, the Commission is required to revise valuations from time to time to bring them up to date and the Commission is requiring the preparation and recording of a large amount of data to be kept currently for its use in future revisions of the valuation. There is a large amount of detail involved and a considerable permanent force is made necessary by reason of the Commission's orders in this respect.

The expenditure for valuation purposes during the year 1924, was \$174,615.90. This is \$15,358.59 less than was expended in 1923. From the commencement of this work, up to December 31st, 1924, \$2,710,783.40 has been expended upon it by your Company.

Freight Traffic

The details of Freight Traffic for the year ending December 31, 1924, compared with the preceding year, were as follows:

	1923	1924	Decrease	
			Amount	Per Cent
Freight Revenue.....	\$113,092,825.75	\$103,516,754.39	\$9,576,071.36	8.47
			Percentage of Increase or Decrease	
Tons of Revenue Freight Carried...	58,207,915	52,158,316		10.39 Dec.
Tons of Revenue Freight Carried One Mile	9,248,615,383	8,290,312,710		10.36 Dec.
Average Revenue Received per Ton	\$1.94291	\$1.98466		2.15 Inc.
Average Revenue Received per Ton per Mile	1.223 cents	1.249 cents		2.13 Inc.
Average Distance Each Revenue Ton was Hauled	158.89 miles	158.95 miles		.04 Inc.
Mileage of Freight and Proportion of Mixed Trains.....	20,282,667	18,645,485		8.07 Dec.
Average Number of Tons of Revenue and Non-revenue Freight Carried per Train Mile.....	548.71	529.53		3.50 Dec.
Average Number of Tons of Revenue and Non-revenue Freight Carried per Loaded Car Mile.....	24.64	23.49		4.67 Dec.
Average Freight Revenue per Train Mile	\$5.58	\$5.55		.54 Dec.

Passenger Traffic

The details of Passenger Traffic for the year ending December 31, 1924, compared with the preceding year, were as follows:

	1923	1924	Decrease	
			Amount	Per Cent
Passenger Revenue...	\$30,390,660.14	\$28,872,654.95	\$1,518,005.19	4.99
			Percentage of Decrease	
Revenue Passengers Carried.....	33,004,205	32,409,398		1.80 Dec.
Revenue Passengers Carried One Mile	1,122,116,027	1,097,745,118		2.17 Dec.
Average Fare Paid per Passenger.	92.081 cents	89.087 cents		3.25 Dec.
Average Rate Paid per Passenger per Mile	2.708 cents	2.630 cents		2.88 Dec.
Average Distance Traveled per Revenue Passenger	34.00 miles	33.87 miles		.38 Dec.
Mileage of Passenger and Proportion of Mixed Trains.....	18,904,478	18,489,321		2.20 Dec.
Average Passenger-train Revenue per Train Mile	\$2.19	\$2.17		.91 Dec.

Maintenance of Way and Structures

The total Operating Expenses of the Company, for the year ending December 31, 1924, were \$120,536,645.08; of this amount \$22,559,053.13 was for charges pertaining to the Maintenance of Way and Structures. Included in these charges is a large part of the cost of 85,275 tons of steel rails, the greater portion of which was laid in replacement of rails of lighter weight in 638.30 miles of track; also the cost of 3,051,507 new track ties.

The charges of Maintenance of Way and Structures also include a portion of the cost of ballasting 6.00 miles of track with gravel, and 44.62 miles with cinders; the erection, in place of wooden structures, of 47 new steel bridges aggregating 4,135 feet in length and containing 2,037 tons of bridge metal; and the replacement of other wooden structures with masonry arch and box culverts and cast-iron pipes, the openings being filled with earth. The length of wooden structures replaced by permanent work aggregates 9,665 feet.

The charges on account of Maintenance of Way and Structures for the year ending December 31, 1924, compared with the preceding year, were as follows:

	1923	1924	Increase or Decrease
Cost of Rails:			
New steel rails.....	\$1,424,391.44	\$2,032,169.83	\$607,778.39 Inc.
Usable and rerolled rails.....	1,048,307.24	1,291,950.26	243,643.02 Inc.
	\$2,472,698.68	\$3,324,120.09	\$851,421.41 Inc.
Less credit for old rails and other items	1,726,610.29	2,548,874.70	\$822,264.41 Inc.
Net charge for rails.....	\$746,088.39	\$775,245.39	\$29,157.00 Inc.

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	1923	1924	Increase or Decrease
Cost of Ties.....	3,807,268.63	4,225,267.30	417,998.67 Inc.
Cost of Ballast.....	343,599.60	242,495.88	101,103.72 Dec.
Cost of Other Track Material.....	1,077,952.05	1,322,750.92	244,798.87 Inc.
Roadway and Track Labor and Other Expenses.....	9,808,897.29	9,185,531.25	623,366.04 Dec.
Total Charges for Roadway and Track.....	\$15,783,805.96	\$15,751,290.74	\$32,515.22 Dec.
OTHER CHARGES ACCOUNT			
MAINTENANCE OF WAY AND STRUCTURES WERE AS FOLLOWS:			
Bridges, Trestles and Culverts.....	1,477,391.66	1,303,140.23	174,251.43 Dec.
Road Crossings, Fences, etc.....	798,963.89	666,778.30	132,185.59 Dec.
Signals and Interlockers.....	829,624.63	753,832.57	75,792.06 Dec.
Buildings, Fixtures and Grounds.....	2,368,835.57	2,017,159.56	351,676.01 Dec.
Wharves and Docks.....	162,479.41	157,792.18	4,687.23 Dec.
Superintendence.....	1,009,395.84	1,005,050.42	4,345.42 Dec.
Roadway Tools and Supplies.....	457,523.73	402,712.04	54,811.69 Dec.
Sundry Miscellaneous Charges.....	480,243.09	501,297.09	21,054.00 Inc.

Total Charges Account Maintenance of Way and Structures.....\$23,368,263.78 \$22,559,053.13 \$809,210.65 Dec.

The above charges for Maintenance of Way and Structures for the current year amounted to 18.72 per cent. of the total Operating Expenses, as compared with 17.64 per cent. for the preceding year.

Maintenance of Equipment

The charges on account of Maintenance of Equipment for the year ending December 31, 1924, compared with the preceding year, were as follows:

	1923	1924	Increase or Decrease
Locomotives.....	\$15,551,616.09	\$13,463,360.05	\$2,088,256.04 Dec.
Passenger-train Cars.....	2,806,085.45	2,577,072.02	229,013.43 Dec.
Freight-train Cars.....	15,169,957.40	12,252,774.89	2,917,182.51 Dec.
Work Equipment.....	517,697.70	420,823.70	96,874.00 Dec.
Shop Machinery.....	527,442.75	473,081.65	54,361.10 Dec.
Superintendence.....	1,042,231.12	1,099,261.26	57,030.14 Inc.
Sundry Miscellaneous Charges.....	305,031.24	295,092.41	9,938.83 Dec.

Total Charges Account Maintenance of Equipment.....\$35,920,061.75 \$30,581,465.98 \$5,338,595.77 Dec.

The above charges for Maintenance of Equipment for the current year amount to 25.37 per cent of the total Operating Expenses, as compared with 27.11 per cent for the preceding year.

Transportation Expenses

The charges on account of Transportation Expenses for the year ending December 31, 1924, compared with the preceding year, were as follows:

	1923	1924	Decrease
Labor.....	\$43,400,937.14	\$40,941,302.34	\$2,459,634.80 Dec.
Fuel for Locomotives.....	14,241,853.23	11,482,776.50	2,759,076.73 Dec.
Supplies and Miscellaneous Items.....	8,865,820.21	8,077,406.96	788,413.25 Dec.

Total Charges Account Transportation Expenses.....\$66,508,610.58 \$60,501,485.80 \$6,007,124.78 Dec.

The above charges for Transportation Expenses for the current year amount to 50.19 per cent of the total Operating Expenses, as compared with 50.19 per cent for the preceding year.

Capital Stock

The Capital Stock and Scrip of the Company held by the Public has been reduced \$25,080.00 during the year, as follows:

By the purchase of Common Stock Scrip.....	\$80.00
By the purchase of Special Stock.....	25,000.00
	\$25,080.00

The Capital Stock authorized by the Company is Two Hundred Million Dollars (\$200,000,000.00), of which the following has been issued to December 31, 1924:

HELD BY THE PUBLIC:	
Common Stock and Scrip.....	\$145,156,263.82
Preferred Stock and Scrip.....	22,395,120.00
Total Stock and Scrip held by the Public.....	\$167,551,383.82
HELD IN TREASURY:	
Common Stock and Scrip.....	\$2,343,377.15
Preferred Stock and Scrip.....	3,834.56
Total Stock and Scrip held in Treasury.....	2,347,211.71
Total Capital Stock and Scrip, December 31, 1924.....	\$169,898,595.53

Funded Debt

At the close of the preceding year the amount of Funded Debt held by the Public was.....\$260,170,800.00
The above amount has been decreased during the year ending December 31, 1924, by Bonds and Equipment Trust Certificates redeemed, as follows:

M. L. S. & W. Ry. First Mortgage (Michigan Division), 6% (including \$3,000.00 unrepresented and transferred to "Current Liabilities").....	\$1,281,000.00
C. & N. W. Ry. Sinking Fund of 1879, 5%.....	6,000.00
C. & N. W. Ry. Sinking Fund Debentures of 1933, 5%.....	216,060.00
Minnesota & Iowa Ry. First Mortgage, 3½% (including \$1,000.00 unrepresented and transferred to "Current Liabilities").....	1,904,000.00
C. & N. W. Ry. Equipment Gold Notes of 1920 6%.....	664,900.00
C. & N. W. Ry. Equipment Trust Certificates of 1922, 5%:	
Series M.....	\$345,000.00
Series N.....	317,000.00
	662,000.00

Total Funded Debt Redeemed.....4,733,900.00

\$255,436,900.00

And the above amount has been increased by Bonds sold during the year ending December 31, 1924, as follows:

C. & N. W. Ry. General Mortgage Gold of 1927, 5%, sold to reimburse the Company for past expenditures made for construction and in redeeming underlying bonds.....	3,150,000.00
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Leaving Funded Debt held by the Public, December 31, 1924.....\$258,586,900.00

Bonds in the Treasury and Due from Trustee

At the close of the preceding year the amount of the Company's unpledged Bonds and Equipment Trust Certificates in the Treasury and Due from Trustee was.....\$19,931,000.00

The above amount has been increased during the year ending December 31, 1924, as follows:

C. & N. W. Ry. General Mortgage Gold Bonds of 1927, due from Trustee, in exchange for bonds redeemed during the year.....	1,278,000.00
Other bonds redeemed during the year exchangeable for C. & N. W. Ry. General Mortgage Gold Bonds of 1927, viz.: C. & N. W. Ry. Sinking Fund of 1879, 5%.....	\$6,000.00
C. & N. W. Ry. Sinking Fund Debentures of 1933, 5%.....	216,000.00
	222,000.00
C. & N. W. Ry. General Mortgage Gold Bonds of 1927, due from Trustee on account of Construction Expenditures made during the year.....	1,000,000.00
C. & N. W. Ry. First and Refunding Mortgage, 5%, due from Trustee in exchange for bonds redeemed during the year.....	1,904,000.00
C. & N. W. Ry. Equipment Trust Certificates of 1923, 5%, Series P issued.....	1,560,000.00
	\$25,895,000.00

And the above amount has been decreased during the year ending December 31, 1924, as follows:

C. & N. W. Ry. General Mortgage Gold Bonds of 1927, 5%, sold to reimburse the Company for past expenditures made for construction and in redeeming underlying bonds.....	\$3,150,000.00
C. & N. W. Ry. Equipment Trust Certificates of 1913, 4½%, matured and cancelled:	
Series E.....	485,000.00
Series F.....	115,000.00
C. & N. W. Ry. Equipment Trust Certificates of 1917, 5%, matured and cancelled:	
Series G.....	422,000.00
Series H.....	400,000.00
Series I.....	178,000.00
C. & N. W. Ry. Equipment Trust Certificates of 1920, 6½%, matured and cancelled:	
Series L.....	187,000.00
C. & N. W. Ry. Equipment Trust Certificates of 1923, 5%, matured and cancelled:	
Series O.....	412,000.00
	\$5,349,000.00

Total Bonds and Equipment Certificates in the Treasury and due from Trustee December 31, 1924, unpledged.....\$20,546,000.00

The following bonds owned by the Company are pledged as security for the C. & N. W. Ry. 10-Year Secured Gold Bonds and C. & N. W. Ry. 15-Year Secured Gold Bonds:

C. & N. W. Ry. General Mortgage Gold of 1927, 5%.....	\$20,500,000.00
C. & N. W. Ry. First and Refunding Mortgage, 6%.....	15,000,000.00

Total December 31, 1924, pledged.....\$35,500,000.00

Lands

During the year ending December 31, 1924, 11,547.09 acres and 1 town lot of the Company's Land Grant lands were sold for the total consideration of \$511,416.75. The number of acres remaining in the several Grants December 31, 1924, amounted to 217,669.95 acres, of which 17,439.59 acres were under contract for sale, leaving unsold 200,230.36 acres.

Acknowledgment is made to all officers and employees of their loyal and efficient co-operation and service.

Appended hereto may be found statements, accounts and statistics relating to the business of the fiscal year and the condition of the Company's affairs on December 31, 1924.

By order of the Board of Directors.

W. H. FINLEY,
President.

Chicago, April 22, 1925.

[ADVERTISEMENT]

Chicago, Saint Paul, Minneapolis and Omaha Railway Company

—Forty-Third Annual Report

Report of the Board of Directors

To the Stockholders of the Chicago, Saint Paul, Minneapolis and Omaha Railway Company:

The Board of Directors submits herewith its report of the affairs of the Chicago, Saint Paul, Minneapolis and Omaha Railway Company for the year ended December 31, 1924.

OPERATING REVENUES:	
Freight	\$20,019,001.88
Passenger	5,709,095.60
Other Transportation	1,808,625.27
Incidental	379,013.65
Total Operating Revenues	\$27,915,736.40
OPERATING EXPENSES (79.49 per cent of Operating Revenues)	
Net Revenue from Railway Operations	\$5,725,912.68
RAILWAY TAX ACCRUALS (5.79 per cent. of Operating Revenues)	\$1,615,939.66
UNCOLLECTIBLE RAILWAY REVENUES	13,072.29
Railway Operating Income	\$4,096,900.73
NET RENTAL DEDUCTIONS	687,911.62
Net Railway Operating Income	\$3,408,989.11
NONOPERATING INCOME:	
Dividend Income	\$40,680.83
Income from Funded Securities	8,635.70
Income from Unfunded Securities and Accounts, and other items	201,745.46
Total Nonoperating Income	251,061.99
Gross Income	\$3,660,051.10
DEDUCTIONS FROM GROSS INCOME:	
Interest on Funded Debt	\$2,578,398.33
Other Deductions	44,744.53
Total Deductions from Gross Income	2,623,142.86
Net Income	\$1,036,908.24
DISPOSITION OF NET INCOME:	
Dividends—	
5% on Preferred Stock	562,965.00
Balance Income for the year	\$473,943.24

General Remarks

OPERATING REVENUES

It will be observed from the data contained in this report that the total operating revenues declined 1.58 per cent from what they were in 1923.

The total decline in freight revenue as compared with 1923 was 27/100 of one per cent. The total decline in passenger revenue as compared with 1923 was 6.58 per cent.

The entire decline in passenger traffic was in the short haul business and is almost entirely accounted for by the more general use of motor vehicles. To meet the loss in short haul traffic your company is bending every effort to increase its long haul passenger business. There was a slight increase in long haul passenger business, but not sufficient to overcome the loss resulting from the increased use of motor vehicles.

FREIGHT RATES

Your company carried more net tons of freight one mile in 1924 than in 1923, but the gross revenue, as stated, was less. This situation is due largely to rate adjustments that have been going on since 1921, with the net result that in 1924 the average rate per ton per mile had decreased 15 per cent, and the average rates applicable throughout the year 1924 were 35 per cent higher than in 1911, whereas the average for all the railroads in the United States was 51 per cent higher than 1911.

The railroads composing the Western Group have been treated less favorably with relation to rates than those in the Eastern Group, notwithstanding the latter have the greater density of traffic. After giving effect to the various reductions that have taken place beginning with 1921, we find that the net result is to leave rates in the Eastern District 23 per cent higher than the rates as they existed prior to the increase in 1920, and in the Western District but 10 per cent higher. When the Western District, however, is divided as between the roads composing Western Trunk Lines and located in the Northwestern region and roads composing the Southwestern Group, we find that those in the Northwestern Group are on an abnormally low basis. While we do not have the exact figures for all the railroads in the two groups for 1924, yet it is safe to say that they are on substantially the same relative basis as in 1923. In 1923 the average freight rate per ton per mile in the Southwestern Group was 1.364 cents, while in the exclusive Western Trunk Line Group, which includes all the mileage of your company, it was only 1.12 cents per ton per mile.

It is unnecessary to call attention to the fact that cost of opera-

tion in the Northwestern region is greater than in the Southwestern region. Your officers feel that the rate structure in the Northwestern region is abnormally low and unfair to the carriers serving this territory, not only when measured by the intrinsic value and cost of the service rendered, but likewise when compared with average rates prevailing in other regions; keeping in mind traffic density. No effort has been spared to bring about equitable adjustments, but future action of regulating authorities remains problematical.

Dr. M. O. Lorenz, Director of the Bureau of Statistics, of the Interstate Commerce Commission, summarizes the situation in the following language:

"The increase in operating expenses and taxes per ton mile in each district (Eastern, Southern and Western) is very marked, while the net railway operating income available for capital charges shows on the same unit basis no increase in any district, and in the Western District a very marked decline."

EXPENSES

Notwithstanding increased tonnage and decreased gross revenue, your company lowered its operating expenses by \$1,326,323.65, or 5.64 per cent, as compared with 1923. This was accomplished in large measure by decrease in the cost of fuel, and by increasing the number of net tons per car and per train and the number of train miles per hour. Maintenance of equipment costs were reduced 10.62 per cent, whereas maintenance of way costs were slightly higher than in 1923. Equipment and ways and structures have been well maintained and are in excellent condition.

TAXES

Taxes have grown to be an enormous burden upon the revenues of your company. In 1924 they consumed 5.79 per cent of the total revenue.

DIVIDENDS

Owing to the lack of income from operations due to the low rate structure, high wage scale and excessive taxes, your Board of Directors found it necessary to pass the dividend upon the common stock and to reduce the dividend upon the preferred stock from 7 per cent to 5 per cent.

Additions and Betterments

Additions and Betterments to the property of the Company for the year ended December 31, 1924, were as follows:

EXPENDITURES FOR ROAD:	
Widening Cuts and Fills	\$80,607.03
Rails and Other Track Material	149,557.76
Bridges, Trestles and Culverts	202,827.93
Additional Yard Tracks and Sidings	34,955.34
Station and Office Buildings	66,360.74
Water Stations	45,472.18
Shop Buildings and Enginehouses	100,396.97
Other Items	52,810.30
Total	\$732,988.25
EXPENDITURES FOR EQUIPMENT:	
Improvement of Equipment	518,124.99
Total Expenditures for Road and Equipment	\$1,251,113.24

The credits to "Investment in Road and Equipment" for property retired during the year ended December 31, 1924, were as follows:

RETIREMENTS OF ROAD	\$197,692.02
RETIREMENTS OF EQUIPMENT:	
1 Locomotive	\$10,520.20
197 Freight Train Cars	122,359.60
53 Company Service Cars	30,117.23
Other Items	287,863.64
Total	450,860.67
Total Retirements of Road and Equipment	648,552.69
Net Additions to "Investment in Road and Equipment"	\$602,560.55

Lands

During the year ended December 31, 1924, 583.70 acres of the Company's Land Grant lands were sold for the total consideration of \$4,844.50. The number of acres remaining in the several Grants December 31, 1924, amounted to 58,825.91 acres, of which 7,405.75 acres were under contract for sale, leaving unsold 51,420.16 acres.

Your Board desires to express its appreciation to the officers and employees of the Company for the interest they have displayed in its affairs and their conscientious endeavors to bring about improvement in the service.

By order of the Board of Directors.

W. H. FINLEY,
President.

Chicago, Illinois, April 21, 1925.

[ADVERTISEMENT]

The New York, Chicago and St. Louis Railroad Company— Second Annual Report

Year Ended December 31, 1924

To the Stockholders of

THE NEW YORK, CHICAGO AND ST. LOUIS RAILROAD COMPANY:

The Board of Directors herewith submits its report for the year ended December 31, 1924.

The authorized capital stock of the company is \$105,500,000, of which \$78,967,900 was authorized to be issued in exchange for stocks of the constituent companies. On December 31, 1924, the status of the capital stock was as follows:

Issued and outstanding:	
Common	\$30,322,194
Preferred	25,783,451
	\$56,105,645
Issued and held in Treasury:	
Common	\$15,781,556
Preferred	6,841,699
	22,623,255
To be issued for stocks of constituent companies:	
Common	\$144,150
Preferred	94,850
	239,000
Total capital stock at December 31, 1924....	\$78,967,900

The funded debt outstanding at Dec. 31, 1923, was \$82,837,000. It was decreased during the calendar year by retirement of:

Equipment Trust Certificates of 1916.....	\$110,000
Engine Trust Certificates of 1916.....	30,000
Equipment Trust Certificates of 1917.....	342,000
Equipment Trust Certificates of January 15, 1920.....	43,200
Freight Car Equipment Notes of 1920.....	78,800
U. S. Government Loan Notes, Series 1921.....	46,000
Equipment Trust Certificates of 1922.....	35,000
Second Equipment Trust Certificates of 1922.....	225,000
Equipment Trust Certificates of 1923.....	285,000
Serial Notes to The New York Central Railroad.....	130,000
First Mortgage Bonds.....	105,000
	1,430,000

It was increased during the calendar year by issuance of:

Equipment Trust Certificates of 1924.....	\$2,865,000
Refunding Mortgage Bonds.....	26,058,000
	28,923,000

Funded debt outstanding as of December 31, 1924.... \$110,330,000

To provide more adequately for the efficient and economical handling of the Company's traffic, an Equipment Trust Agreement

The New York, Chicago and St. Louis Railroad Company

GENERAL BALANCE SHEET, DECEMBER 31, 1924

Assets		Liabilities	
Investments		Stock	
Investment in road and equipment		Capital Stock	
Road	\$146,904,076.75	Common	\$46,100,500.00
Equipment	44,952,304.27	Cumulative preferred, Series A.....	32,619,200.00
General expenditures.....	529,361.49	Ownership certificates	
	\$192,385,742.51	Common	3,250.00
Improvements on leased railway property	67,869.94	Cumulative preferred, Series A.....	5,950.00
Sinking fund for equipt. trust certificates	341,059.63		\$78,728,900.00
Deposits in lieu of mortgd. property sold	6,000.00	Stock liability for conversion	
Miscellaneous physical property.....	750,175.91	Common	\$144,150.00
Investments in affiliated companies		Cumulative preferred, Series A.....	94,850.00
Stocks	\$18,742,051.85		239,000.00
Bonds	460,601.00		\$78,967,900.00
Advances	93,800.00		
	19,296,452.85	Long Term Debt	
Other investments		Funded debt unmatured	
Stocks	\$1,000.00	Equipment obligations	\$14,948,000.00
Bonds	163,406.32	Mortgage bonds	92,788,000.00
Notes	21,800.00	Mortgage bonds nominally issued.....	2,504,000.00
Miscellaneous	2,140.00	Collateral trust notes	
	188,346.32	Note to U. S. R. R. Administration..	1,000,000.00
	\$213,035,647.16	U. S. Govt. loan notes, Series 1921..	554,000.00
Current Assets		Miscellaneous obligations	
Cash	\$3,953,108.48	Serial notes to New York Central R.R.	1,040,000.00
Time draft and deposits.....	2,500,000.00		\$112,834,000.00
Special deposits	1,331,727.00	Receiver's certificates of indebtedness.....	554,000.00
Loans and bills receivable.....	125,001.80		\$113,388,000.00
Traffic and car service balances receivable.....	1,745,530.66	Current Liabilities	
Net balance receivable from agents and conductors.....	582,955.48	Loans and bills payable.....	\$5,000.00
Miscellaneous accounts receivable.....	1,100,008.61	Traffic and car service balances payable.....	1,876,449.36
Material and supplies.....	4,672,328.03	Audited accounts and wages payable.....	2,990,083.74
Interest and dividends receivable.....	459,577.51	Miscellaneous accounts payable.....	802,067.41
Rents receivable	12,929.50	Interest matured unpaid.....	510,435.00
Other current assets.....	223,250.87	Dividends matured unpaid.....	821,292.00
	\$16,706,417.94	Unmatured interest accrued.....	1,075,262.80
Deferred Assets		Other current liabilities.....	301,763.99
Working fund advances.....	\$18,157.49		\$8,382,354.30
Insurance and other funds.....	10,287.50	Deferred Liabilities	
Other deferred assets.....	6,198.00	Other deferred liabilities.....	\$811,315.09
	\$34,642.99	Unadjusted Credits	
Unadjusted Debits		Tax liability	\$2,619,018.02
Rents and insurance premiums paid in advance.....	\$62,500.00	Operating reserves	290,750.00
Discount on funded debt.....	2,793,574.20	Accrued depreciation—Equipment	8,983,682.69
Other unadjusted debits.....	1,708,488.54	Other unadjusted credits.....	586,991.82
Securities issued or assumed—Unpledged			\$12,480,442.53
Capital Stock—Common.....	\$15,781,756.00	Corporate Surplus	
Cumulative preferred.....	6,841,699.00	Additions to property through income and surplus.....	\$7,616.19
Second and improvement mortgage bonds	690,000.00	Funded debt retired through income and surplus.....	98,184.40
	23,313,455.00	Miscellaneous fund reserves.....	93,800.00
Securities issued or assumed—Pledged Sec-			
ond and improvement mortgage bonds..	\$1,389,000.00	Total appropriated surplus.....	\$199,600.59
Receiver's certificates of indebtedness....	554,000.00	Profit and loss—Balance.....	45,793,113.32
Prior lien bonds.....	425,000.00		\$45,992,713.91
	2,368,000.00		\$260,022,725.83
	\$30,246,017.74		
	\$260,022,725.83		

[ADVERTISEMENT]

was entered into during the year for the purchase of 300 double deck composite stock cars, 1,000 steel underframe automobile cars, 10 switching locomotives, and 10 Mikado freight locomotives, the total par value of Equipment Trust Certificates issued under this agreement being \$2,865,000.

Under Finance Docket No. 3582, the Interstate Commerce Commission granted authority during the year to issue Refunding Mortgage Bonds (Series A), par value \$26,058,000, to reimburse the Treasury for capital expenditures theretofore made.

During the year, investment in road and equipment was increased \$10,345,694.17 and other investments were increased \$10,625,716.40, making a total increase in investments of \$20,971,410.57.

The usual financial and statistical statements are appended.

The Board takes pleasure in acknowledging the fidelity, efficiency, and united efforts displayed by your officers and employees in the discharge of their duties during the year.

For the Board of Directors,

O. P. VAN SWERINGEN,

Chairman of the Board.

J. J. BERNET,

President.

The New York, Chicago and St. Louis Railroad Company

Income Account		1924	1923
Operating Income			
Railway operating revenues.....		\$53,992,434.88	\$57,477,378.99
Railway operating expenses.....		40,276,955.85	43,938,161.63
Net revenue from railway operations		\$13,715,479.03	\$13,539,217.36
Railway tax accruals.....		\$2,737,032.51	\$2,852,483.16
Uncollectible railway revenues.....		18,730.02	7,690.40
		\$2,755,762.53	\$2,860,173.56
Railway operating income.....		\$10,959,716.50	\$10,679,043.80
Nonoperating Income			
Rent from locomotives.....		\$22,328.36	\$47,094.88
Rent from passenger-train cars.....		22,256.40	23,524.58
Rent from work equipment.....		19,755.57	13,921.10
Joint facility rent income.....		198,291.78	202,748.19
Miscellaneous rent income.....		144,274.51	119,893.26
Miscellaneous nonoperating physical property.....		25,918.56	24,821.28
Dividend income.....		994,860.00	719,582.50
Income from funded securities.....		39,722.50	46,968.06
Income from unfunded securities and accounts.....		246,318.33	329,194.80
Income from sinking and other reserve funds.....		425.00	425.00
Miscellaneous income.....		5,360.93	2,625.30
Total nonoperating income.....		\$1,719,511.94	\$1,530,798.95
Gross income.....		\$12,679,228.44	\$12,209,842.75

Deductions from Gross Income		1924	1923
Hire of freight cars—Debit balance.....		\$1,147,559.78	\$1,301,615.28
Rent for locomotives.....		28,164.82	13,723.25
Rent for passenger-train cars.....		77,043.15	59,899.51
Rent for work equipment.....		5,054.39	14,472.88
Joint facility rents.....		374,890.93	377,767.57
Rent for leased roads.....		11,690.25	2,789.90
Miscellaneous rents.....		97,583.94	101,100.76
Miscellaneous tax accruals.....		6,387.86	9,316.17
Interest on funded debt.....		4,669,257.35	3,669,233.39
Interest on unfunded debt.....		269,895.87	248,575.30
Amortization of discount on funded debt.....		71,047.08	45,846.79
Miscellaneous income charges.....		51,406.07	34,160.34

Total deductions from gross income..... \$6,809,981.49 \$5,878,501.14

Net income..... \$5,869,246.95 \$6,331,341.61

Disposition of Net Income		1924	1923
Income applied to sinking funds.....		\$98,184.40	\$98,482.05
Dividend appropriations of income.....		3,361,774.50	3,556,648.00

Total sinking fund and dividend appropriations..... \$3,459,958.90 \$3,655,130.05

Income balance transferred to profit and loss account..... \$2,409,288.05 \$2,676,211.56

Profit and Loss Account		1924	1923
Credit balance December 31, 1923.....			\$35,883,692.09
Balance transferred from Income Account.....		\$2,409,288.05	
Profit on road and equipment sold.....		8,695.57	
Discount on bonds purchased and retired.....		6,815.60	
Unrefundable overcharges.....		11,193.26	
Donations.....		8,669.54	
Miscellaneous credits, and adjustments.....		7,836,905.04	10,281,567.06
Loss on retired road and equipment.....		\$60,086.41	
Surplus appropriated for investment in physical property.....		8,669.54	
Debt discount extinguished through surplus.....		68,775.16	
Premium on equipment trust certificates purchased and retired.....		1,788.90	
Miscellaneous debits.....		232,825.82	372,145.83
Credit balance December 31, 1924.....			\$45,793,113.32

The Chesapeake and Ohio Railway Company — Forty-Seventh Annual Report

RICHMOND, Va., March 31, 1925.

TO THE STOCKHOLDERS:

The Forty-seventh Annual Report of the Board of Directors, for the fiscal year ended December 31, 1924, is herewith submitted.

The average mileage operated during the year was 2,555.7 miles, an increase over the previous year of 3.0 miles. The mileage at the end of the year was 2,555.0 miles, an increase of 2.1 miles over mileage on December 31, 1923.

Results for the Year

Operating Revenues.....	\$108,033,448.35
(Increase \$6,057,650.67, or 5.94%.)	
Operating Expenses.....	82,781,702.76
(Increase \$3,891,926.30, or 4.93%.)	
Net Operating Revenue.....	\$25,251,745.59
(Increase \$2,165,724.37, or 9.38%.)	
Taxes and Uncollected Railway Revenues.....	4,788,669.37
(Increase \$71,999.39, or 1.53%.)	
Railway Operating Income.....	\$20,463,076.22
(Increase \$2,093,724.98, or 11.40%.)	
Net Equipment and Joint Facility Rents.....	1,429,844.25
(Increase \$663,839.88, or 86.66%.)	
Net Railway Operating Income.....	\$21,892,920.47
(Increase \$2,757,564.86, or 14.41%.)	
Miscellaneous Income.....	1,886,080.07
(Decrease \$329,968.15, or 14.89%.)	
Total Gross Income.....	\$23,779,000.54
(Increase \$2,427,596.71, or 11.37%.)	
Rental and Other Payments.....	414,862.78
(Increase \$34,097.20, or 8.95%.)	
Income for year available for interest.....	\$23,364,137.76
(Increase \$2,393,499.51, or 11.41%.)	
Interest (48.21% of amount available) amounted to.....	11,263,067.14
(Decrease \$728,140.59, or 6.07%.)	
Net Income for the year.....	\$12,101,070.62
(Increase \$3,121,640.10, or 34.76%.)	
6½% Cumulative Convertible Preferred Stock, Series A, Dividend—two of 3¼% each, aggregating.....	816,302.50

Net Income equivalent to 16.78% of Common Stock outstanding.....	\$11,284,768.12
Common Stock Dividend—two of 2% each, aggregating....	2,619,500.20
Remainder, devoted to corporate purposes.....	\$8,665,267.92

Financial

During the year 1924 your Company purchased the following locomotives and cars:

- 50 Light Type Mikado Locomotives.
- 50 Heavy Type Mikado Locomotives.
- 1,000 40-ton Automobile Box Cars.
- 5,500 57½ ton Steel Hopper Bottom Gondola Coal Cars.
- 600 57½ ton Hopper Bottom Roger Ballast Cars.
- 15 All Steel Express Cars.
- 4 All Steel Dining Cars.
- 100 8-wheel Steel Superstructure Caboose Cars.
- 5 25 ton, 8-wheel, Locomotive Cranes.
- 4 Jordan Composite Spreaders.

at an approximate cost of \$22,600,000. Equipment Trust, Series "V" was created during the year, under which 5 per cent Equipment Trust Certificates were issued to the aggregate principal amount of \$18,000,000, an amount sufficient to provide approximately 80 per cent of the total cost of the above mentioned equipment. These Certificates are dated July 1st, 1924, and will be due July 1st, 1939, and provide for annual payment of \$1,200,000, on July 1st of each year, commencing with 1925.

All of the above mentioned equipment with the exception of

- 4 All Steel Dining Cars.
- 449 40-ton Automobile Box Cars.
- 11 All Steel Express Cars.
- 636 Steel Gondola Cars.

were delivered to your Company prior to December 31st, 1924.

The program of Additions and Betterments and improvements which were financed in large part by the issuance of preferred stock, which was referred to in annual reports for 1922 and 1923, was nearly completed during the year. Of the \$12,558,500, all but approximately \$2,500,000 has been expended up to December 31st, 1924. Those few pieces of work which were not completed as of the end of the year will be completed during 1925.

[ADVERTISEMENT]

During the year there was issued \$142,000 of 5 per cent First Consolidated Mortgage Bonds to reimburse your Company for 6 per cent Mortgage Gold Bonds of 1922 of like amount which were retired on July 1st, 1922.

Reference is made on page 8 of your annual report for 1923 to the final settlement with the Director General of Railroads covering operations during the period of Federal Control, in which it was stated that the Director General had agreed to fund the indebtedness for Additions and Betterments made to your property during the period of Federal Control to the extent of \$9,200,000, thus releasing to your Company \$2,200,000 in cash. Notes amounting to \$9,200,000.00, due in 1930 and bearing interest at rate of 6 per cent were issued during the year for this indebtedness.

In accordance with Trust Indenture dated April 1, 1916, between your Company and Central Union Trust Company, of New York, 5 per cent Convertible Secured Gold Bonds are convertible into stock up to April 2, 1926, at \$90 per share. During the year these bonds, amounting to \$1,656,000, were converted into Common Capital Stock to the par value of \$1,840,000. This increases the amount of Common Capital Stock outstanding as of December 31, 1924, to \$67,265,725.

The changes in funded debt in the hands of the public during the year were as follows:

	Retired
4 per cent. Big Sandy R'y First Mortgage Bonds.....	\$28,000.00
4 per cent. Coal River R'y First Mortgage Bonds.....	30,000.00
5 per cent. Kanawha Bridge and Terminal Co. First Mortgage Bonds.....	5,000.00
4 per cent. R. & S. W. R'y First Mortgage Bonds.....	6,000.00
5 per cent. Convertible Secured Gold Bonds.....	1,656,000.00
Equipment Trust Obligations.....	3,290,800.00
Decrease	\$5,015,800.00
Increase in obligations shown under funded debt on balance sheet of December 31, 1924, were as follows:	
5 per cent. Equipment Trust Certificates—Series "V".....	\$18,000,000.00
5 per cent. First Consolidated Mortgage Bonds.....	142,000.00
Secured Obligations account final settlement Federal Control Period	9,200,000.00
Increase	\$27,342,000.00

General Remarks

Branch Line Extensions during the year have been as follows:

Huntington Division in West Virginia—Colcord to Jarro, W. Va., Clear Fork Extension.....	.95 Miles
Logan Division—Island Creek Railroad—Second Whitman Creek Extension, Mine No. 14 to Mine No. 20	2.66 Miles
Trace Fork Branch, Holden to Mine No. 21.....	2.32 Miles
	5.93 Miles
Hinton Division—Raleigh, W. Va., abandonment of a portion of Glade Creek and Raleigh Branch....	.78 Miles
Huntington Division in West Virginia—Sovereign, W. Va., retirement of Spruce Fork Branch.....	3.03 Miles
	3.81 Miles
making the total increase.....	2.12 Miles

Additional Second Track Mileage put into operation during the year, as follows:

Logan Division—Stollings, W. Va., to McConnell, W. Va.	1.76 Miles
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Third Track Mileage increased by:

Huntington Division in Kentucky—Remainder of track East End of to West End of Ashland, Ky.	4.46 Miles
Less mileage reported in 1923 Annual Report.....	2.39 Miles
making total increase in Third Track of.....	2.07 Miles

The Equipment Inventory, as of December 31, 1924, was as follows:

		Increase	Decrease
Locomotives owned	705	...	44
Locomotives covered by Equipment Trust.....	300	118	..
	1,005	74	..
Passenger Train Cars owned.....	368	2	..
Passenger Train Cars covered by Equipment Trust	105	4	..
	473	6	..
Freight Train and Miscellaneous Cars owned.....	30,750	...	2,341
Freight Train Cars covered by Equipment Trust.....	23,291	4,071	..
Total	54,041	1,730	..

The changes during the year in the accrued depreciation of equipment account were as follows:

Balance to credit of account December 31, 1923.....	\$15,591,825.16
Amount credited during year ended December 31, 1924, by charges to Operating Expenses.	\$3,449,164.74
Less—	
Accrued Depreciation on equipment retired during same period.....	1,890,976.18
Balance to credit of account December 31, 1924.....	\$17,150,013.72
Operating Revenues were, \$108,033,448.35	\$101,975,797.68
Operating Expenses were 82,781,702.76	78,889,776.46
Net Operating Revenues	25,251,745.59
Operating Ratio	76.6%
	77.4% Dec. '8%

The revenue coal and coke tonnage was 41,747,672, an increase of 18.0 per cent; other freight tonnage was 11,917,940, a decrease

of 5.2 per cent. Total revenue tonnage was 53,665,612 tons, an increase of 11.9 per cent. Freight revenue was \$92,223,412.52, an increase of 8.2 per cent. Freight train mileage was 12,403,629 miles, an increase of 13.3 per cent. Revenue ton miles were 14,267,551,136, an increase of 10.1 per cent. Ton mile revenue was 6.46 mills, a decrease of 1.7 per cent. Revenue per freight train mile was \$7.435, a decrease of 4.5 per cent. Revenue tonnage per train mile was 1,150 tons, a decrease of 3.0 per cent; including Company's freight, the tonnage per train mile was 1,205 tons, a decrease of 3.1 per cent. Tonnage per locomotive mile, including Company's freight, was 1,087 tons, a decrease of 2.0 per cent. Revenue tonnage per loaded car was 38.7 tons, a decrease of 1.8 per cent. Tons of revenue freight carried one mile per mile of road were 5,582,639, an increase of 9.9 per cent.

There were 6,845,756 passengers carried, a decrease of 7.9 per cent. The number carried one mile was 312,427,518, a decrease of 6.6 per cent. Passenger revenue was \$10,851,179.57, a decrease of 6.9 per cent. Revenue per passenger per mile was 3.473 cents a decrease of 0.3 per cent. Number of passengers carried one mile per mile of road was 127,558, a decrease of 6.7 per cent. Passenger train mileage was 5,659,594, an increase of 1.7 per cent. Passenger revenue per train mile was \$1.917, a decrease of 8.5 per cent; including mail and express it was \$2.281, a decrease of 7.7 per cent. Passenger service train revenue per train mile was \$2.342, a decrease of 7.3 per cent.

Operating Expenses increased \$3,891,926.30, or 4.9 per cent. Transportation Expenses decreased \$598,437.32, or 1.8 per cent. Ratio of Transportation Expenses to Operating Revenues was 30.7 per cent. in 1924 and 33.1 per cent. in 1923. Revenue ton miles increased 10.1 per cent.

Roadway, Track and Structures were maintained in general good condition throughout the year.

There were 39,601.5 tons of new rail (13,920.7 tons 130 lb., 25,623.8 tons 100 lb., 57.0 tons 90 lb.) equal to 231.6 miles of track used in renewal of existing track.

There were 1,177,673 cross ties used in maintaining existing tracks, an increase of 45,780.

There were 800,239 cubic yards of ballast (354,877 cubic yards stone) used in maintaining existing tracks, a decrease of 83,971 cubic yards.

The average amount expended for repairs per locomotive was \$9,515.26, an increase of 11.2 per cent. over 1923; per passenger train car \$1,815.97, an increase of 1.1 per cent; per freight train car \$204.59, a decrease of 11.4 per cent. The increase in the average amount expended per locomotive was due to the increased business requiring more intensive use of locomotives and improvement in the general condition of motive power, and also to the application of new fire boxes to 142 locomotives given general repairs during the year. In 1923 only 69 of the locomotives given general repairs had new fire boxes applied.

In addition to the equipment shown above as purchased during the year, which equipment was covered by Equipment Trust, Series "V," there was purchased and put into service:

2 150-ton Wrecking Cranes.
8 Air Operated Side Dump Cars.
2 Scale Test Cars.
25 30-ton Caboose Cars.

the net cost of which was \$187,286.93.

During the year, 1.2 miles of new second track was constructed between Stollings and McConnell, which, together with .56 miles of existing side track converted into second track, made a total of 1.76 miles of new second track put in operation on the Logan Division.

The following sections of second track started either during the current year, or the previous year, were practically completed at the end of this year:

Between Robbins and Gregg, on the Northern Division, 1.52 miles of new second track, together with 2.11 miles of existing side track converted into second track	3.63 Miles
Between Hampton and Lockwood, on the Big Sandy Division, 4.5 miles of new second track, together with 3.1 miles of existing side tracks converted into second track	7.6 Miles
Between Buffalo Tunnel and Auxier, on the Big Sandy Division, 6.4 miles of new second track, in addition to 3.9 miles of existing side tracks converted into second track	10.3 Miles
Between Fargo and Shelby, on the Big Sandy Division, 2.8 miles of second track, together with one mile of existing side track converted into second track	3.8 Miles

At Newport News, Va., a 1,500-car storage yard was built; at Raleigh, W. Va., two additional yard tracks were built; two 100-car yard tracks were constructed at Sprout and two 100-car yard tracks were constructed at Whitesville on the Coal River District; three 100-car yard tracks were constructed at Taplin on

GENERAL BALANCE SHEET
December 31, 1924

ASSETS

(Excluding Stocks and Bonds owned of The C. & O. Ry. Co. of Indiana and of The C. & O. Equipment Corporation.)

TABLE 3

Property Investment.		
Cost of Road.....	\$226,747,260.98	
Cost of Equipment.....	118,209,357.89	
	\$344,956,618.87	
Improvements on Leased Railway Property.....	36,652.91	
Securities of Proprietary, Affiliated and Controlled Companies—Pledged.		
Stocks	\$15,004,665.19	
Bonds	2,220,002.00	
	\$17,224,667.19	
Other Investments—Pledged.		
Bonds	385,000.00	
Securities—Issued or Assumed—Pledged.		
Bonds	67,329,001.00	
	\$84,938,668.19	
(Includes First Lien and Improvement 5% Mortgage Bonds \$66,842,000.00. See Contra.)		
Miscellaneous Investments.		
Physical Property	504,079.75	
Special Funds, and Funded Debt Issued and Reserved.		
R. & S. W. Ry Co., First Mortgage Bonds—Reserved for Construction.....	\$40,000.00	
Potts Creek Branch—Cash.....	58,224.55	
	98,224.55	
	\$85,540,972.49	
	\$430,534,244.27	
Working Assets.		
Cash in Treasury.....	\$5,162,973.44	
Cash in Transit.....	1,164,163.15	
	\$6,327,136.59	
Cash Deposit—Equipment Trusts "U" and "V" Funds	2,781,930.83	
*Cash Deposit—Preferred Stock, Series "A" Proceeds	3,325,515.02	
Cash Deposit—Special Fund for Additions and Betterments, New Equipment and Maintenance of Equipment Reserve.....	8,044,116.60	
Cash Deposits to pay Interest and Dividends	2,612,718.43	
Miscellaneous Cash Deposits.....	12,000.00	
Loans and Bills Receivable.....	247,640.27	
Traffic Balances	3,940,253.99	
Agents and Conductors.....	417,656.08	
Miscellaneous Accounts Receivable.....	2,637,745.53	
Other Working Assets.....	43,150.66	
	\$30,389,864.00	
Material and Supplies.....	7,495,271.92	
Securities in Treasury—Unpledged.		
Stocks	\$5,606,937.23	
Bonds	5,790,173.56	
	11,397,110.79	
Deferred Assets.		
Unmatured Interest, Dividends and Rents. Advances to Proprietary, Affiliated and Controlled Companies	\$178,815.78	
Advances, Working Funds (Fast Freight Lines, etc.)	822,570.25	
Special Deposits with Trustees, Various Mortgage Funds	11,281.05	
Cash and Securities in Sinking Funds.....	889,902.10	
Cash and Securities in Insurance Reserve Fund	303,219.28	
Sundry Accounts	151,703.54	
	3,591,006.32	
	5,948,498.32	
	\$55,230,745.03	
Total		\$485,764,989.30

*Represented in part by U. S. Government Treasury Notes.

This Company is also liable as a guarantor of the following securities:		
Western Pocahontas Fuel Co. Coupon 5% Notes. Due 1919 and 1921 (\$500,000 each year), owned by this Company.	\$1,000,000.00	
The Chesapeake and Ohio Grain Elevator Co., First Mortgage 4% Bonds due 1938.....	820,000.00	
Richmond-Washington Co. Collateral Trust Mortgage (C. & O. prop'n 3/4) 4% Bonds due 1943.....	10,000,000.00	
Louisville and Jeffersonville Bridge Co. Bills Payable (C. & O. prop'n 1/2) 6% Notes due 1931.....	147,000.00	
Louisville and Jeffersonville Bridge Co. Mortgage (C. & O. prop'n 3/4) Bonds due 1945.....	4,500,000.00	
Western Pocahontas Corporation, First Mortgage 4 1/2% Bonds due 1945.....	750,000.00	
Western Pocahontas Corporation, Extension Mortgage No. 1, 4 1/2% Bonds due 1945.....	97,000.00	
Western Pocahontas Corporation, Extension Mortgage No. 2, 4 1/2% Bonds due 1946.....	51,000.00	

the Logan Division; ten 100-car yard tracks were constructed and put in operation at Russell, Ky., and numerous sidings were built and existing sidings extended to hold the longer trains now being operated.

Bridges were strengthened and rebuilt to handle the heaviest power at the following points: Westham, Va., Bridge No. 92; Reusens, Va., Bridge No. 1511-A; McDowell, Va., Bridge No. 2925; Dearien, Keeney's Creek Branch, Bridge No. 32; Kaymoor, W. Va., Bridge No. 4026; Huff Creek Branch, Bridge No. 79; and four bridges between Dayton and Bellevue.

LIABILITIES

(Excluding Stocks and Bonds owned of The C. & O. Ry. Co. of Indiana and of The C. & O. Equipment Corporation.)

Capital Stock.

Common	\$67,265,725.00
6 1/2% Cumulative Convertible Preferred Stock—Series "A"	12,558,500.00
First Preferred (To be retired under plan of Feb. 23, 1892).....	3,000.00
Second Preferred (To be retired under plan of Feb. 23, 1892).....	200.00
Common—The Chesapeake and Ohio Railway Co. of Indiana	\$79,827,425.00
	1,200.00
	\$79,828,625.00

Funded Debt.

General Funding and Improvement, 5% Bonds	\$3,698,000.00
Convertible, 4 1/2% Bonds.....	31,390,000.00
First Mortgage, R. & S. W. Railway, 4% Bonds	819,000.00
First Consolidated Mortgage, 5% Bonds. 1939	30,000,000.00
First Mortgage, Craig Valley Branch, 5% Bonds	650,000.00
First Mortgage, Greenbrier Railway, 4% Bonds	1,641,000.00
First Mortgage, Warm Springs Branch, 5% Bonds	400,000.00
First Mortgage, Big Sandy Railway, 4% Bonds	4,137,000.00
First Mortgage, Paint Creek Branch, 4% Bonds	539,000.00
First Mortgage, Coal River Railway, 4% Bonds	2,498,000.00
First Mortgage, C. & O. Northern Railway Co. 5% Bonds.....	1,000,000.00
Convertible 5% Secured Gold Bonds.....	36,417,500.00
First Mortgage, Fcits Creek Branch, 4% Bonds	600,000.00
First Mortgage, Kanawha Bridge & Terminal Co. 5% Bonds.....	441,000.00
First Mortgage, Va. Air Line Railway, 5% Bonds	900,000.00
First Mortgage, R. & A. Division, 4% Bonds	6,000,000.00
Second Mortgage, R. & A. Division, 4% Bonds	1,000,000.00
General Mortgage, 4 1/2% Bonds.....	48,616,000.00
Secured Obligations—Account Final Settlement Federal Control Period.....	9,200,000.00
Secured Obligations to U. S. Government	6,738,523.97
Secured Obligations to U. S. Government	1,334,500.00
	\$188,019,523.97
Equipment Trust Obligations and Contracts.....	46,622,800.00
	\$234,642,323.97
First Lien and Improvement 5% Mortgage Bonds not in hands of public (see Contra)	66,842,000.00
	\$314,470,948.97
Working Liabilities.	
Loans and Bills Payable.....	\$2,855,743.11
Traffic Balances	561,970.06
Audited Vouchers and Pay Rolls.....	8,792,158.50
Unpaid Wages	62,297.32
Miscellaneous Accounts Payable.....	490,598.94
Matured Interest and Dividends Unpaid.....	2,546,579.65
Matured Mortgage and Secured Debt Unpaid	18,174.17
Other Working Liabilities.....	486.54
	\$15,328,008.29
Deferred Liabilities.	
Unmatured Interest and Rents.....	\$3,174,200.10
Insurance and Casualty Reserves.....	151,703.54
Taxes Accrued	2,364,323.15
Accrued Depreciation—Equipment	17,150,013.72
Sundry Accounts	4,677,115.27
	\$27,517,355.78
	\$42,845,364.07
Appropriated Surplus.	
Additions to Property through Income and Surplus	\$25,024,192.69
Reserve Invested in Sinking Funds.....	437,213.78
Funded Debt Retired through Income and Surplus	303,219.28
	\$25,764,625.75
Profit and Loss—Balance.....	\$35,842,050.51
	\$61,606,676.26
Total.....	\$485,764,989.30

Norfolk Terminal and Transportation Company First Mortgage 5% Bonds due 1948.....	500,000.00
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all signals to give better indication and conform to latest practice. At Alleghany, Va., and Hinton, W. Va., new 115-foot twin span turntables were installed.

A large program of water station improvements was undertaken. Some of the more important works which were completed are as follows:

Pumping stations and water treating plants were installed at Edgington, Ky., So. Portsmouth, Ky., Maysville, Ky., Foster, Ky., Stony Point, Ky., Peach Creek, Taplin and Ranger on the Logan Division, Brushton, Whitesville, and Sproul on the Coal River District, and Wheeler and Robbins on the Northern Division. At Hurricane, W. Va., Olive Hill, Ky., and Morehead, Ky., steam pumping plants were replaced with oil burning engines and pumps. 50,000 gallon steel tank was constructed at Skelton on the Piney River and Paint Creek Branch; 150,000 gallon steel tank was constructed at Raleigh, W. Va.; and 100,000 gallon steel tank and pumping station was constructed at Strathmore, Va. The water station at Russell, Ky., was improved by the construction of additional storage tank of 700,000 gallon capacity, the replacing of electric driven triplex pumps with electric driven centrifugal pumps and the construction of an intake pump and valve well.

Flood lights were installed at Fulton, Va., and Russell, Ky., to furnish better lighting facilities for these yards.

At Covington, Va., the reduction of "Paynes Grade," a distance of 2.3 miles, between Covington, Va., and Steele, Va., from 0.4 per cent ascending eastbound and 1.13 per cent ascending westbound to level grade, which will increase the tons per train in both directions, was completed and put in operation.

Huntington, W. Va., underground crossing at West 14th Street was completed and put in operation.

Clifton Forge, Va., new freight terminal is being built, consisting of a receiving yard and classification and forwarding yard for eastbound business. The receiving yard will include ten 100 car tracks and a thoroughfare track, and the Hump will be doubled track with scales in each track. The classification yard will include a car rider track and twenty tracks each to hold one hundred car trains. This project will cost about \$3,500,000. Very satisfactory progress was made during 1924 and the work should be completed and put in operation about April 15th, 1925.

At Ashland, Ky., extensive improvements have been made, including additional tracks on Front Street, which provides two freight mains from the east end of Ashland to the west end of Ashland, the two present tracks through the center of the town to be continued in use as passenger main tracks, construction of yard and other tracks and 200-ton track scale, and a third main track between Ashland and Russell, Ky., and passenger station with division offices above, costing approximately \$2,500,000. These im-

provements were practically completed during the year, except the new passenger station, which should be completed and put in operation during the summer of 1925.

Many improvements were undertaken during the year which have not been completed. Some of the more important projects are:

Newport News, Va., replacing 2-track float bridge with 4-track float bridge with additional tracks and crossovers which should be completed in the early part of 1925.

Morrison, Va., construction of seven large storage warehouses for export business. Six of these warehouses are completed and the seventh warehouse should be finished in the early part of 1925.

Lynchburg, Va., new interlocking plant at N. & W. crossing, which is being constructed jointly by the C. & O. and N. & W. Railways, and which should be completed in the early part of 1925.

Gauley, W. Va., passing siding for 100-car trains which should be completed in the fall of 1925.

Combined freight and passenger depots at Betsy Lane and Wolf Pit, Big Sandy Division, which should be completed in the early part of 1925.

Richmond, Va., strengthening foundations of Richmond Viaduct; rebuilding seven bridges on Pond Fork Branch; five bridges on the Dingess Run Branch; four bridges on the Georges Creek Branch; six bridges on the Rum Creek Branch and filling and strengthening numerous trestles on the Chicago Division, all of which work should be completed in the early part of 1925.

At Gladstone, Va., new water station, with 150,000 gallon steel storage tank is being constructed; at Staunton, Va., 150,000 gallon steel storage tank is being constructed; at Huntington, W. Va., water treating plant and pumping station is being constructed and at Russell, Ky., a 500,000 gallon storage tank and supply line is under way. These improvements should be completed in the early part of 1925.

Among the new industries established along your line during the year were the following:

8 Manufacturers of Farm Implements and Farm Products.

22 Manufacturers of Lumber and Lumber Products.

101 Manufacturers of Mineral, Metal and other products.

Your Directors acknowledge the great appreciation of the Company for the faithful and efficient services of its officers and employees.

By order of the Board of Directors.

W. J. HARAHAH,
President.

O. P. VAN SWERINGEN,
Chairman.

The Hocking Valley Railway Company — Twenty-Sixth Annual Report

Columbus, Ohio, March 17, 1925.

To the Stockholders:

The Twenty-sixth Annual Report of the Board of Directors, for the fiscal year ended December 31, 1924, is herewith submitted.

The average mileage operated during the year was 348.57 miles, the same as the average mileage operated during the previous year. The mileage at end of the year was 348.57 miles.

Results for the Year

Operating Revenues.....	\$17,443,398.75
(Decrease \$120,003.65 or .68%.)	
Operating Expenses.....	13,178,502.58
(Decrease \$848,686.54 or 6.05%.)	
Net Operating Revenue.....	\$4,264,896.17
(Increase \$728,682.89 or 20.61%.)	
Taxes and Uncollectible Railway Revenue.....	1,220,050.88
(Increase \$144,667.74 or 13.45%.)	
Railway Operating Income.....	\$3,044,845.29
(Increase \$584,015.15 or 23.73%.)	
Net Equipment and Joint Facility Rents.....	473,234.63
(Increase \$479,997.13 or 7,097.92%.)	
Net Railway Operating Income.....	\$3,518,079.92
(Increase \$1,064,012.28 or 43.36%.)	
Other Income.....	656,817.20
(Increase \$367,259.10 or 126.83%.)	
Total Gross Income.....	\$4,174,897.12
(Increase \$1,431,271.38 or 52.17%.)	
Rentals and Other Payments.....	84,855.87
(Increase \$3,546.56 or 4.36%.)	
Income for the year available for interest.....	\$4,090,041.25
(Increase \$1,427,724.82 or 53.63%.)	
Interest (43.03% of amount available).....	1,759,956.83
(Increase \$20,480.66 or 1.18%.)	
Net Income for the year.....	\$2,330,084.42
(Increase \$1,407,244.16 or 152.49%.)	
Dividends paid during the year:	
Two dividends of 2% each, aggregating.....	439,980.00
Balance, devoted to improvement of physical and other assets.	\$1,890,104.42

Return on Property

The following table shows the amount of return to your Company, from transportation operations only, upon the investment, of your Company and its subsidiary companies, in road and equipment at the termination of each year of the five year period ended December 31, 1924. The road having been operated in January and February 1920 by the United States Railroad Administration, the Compensation payable by the Government has been used for these months in lieu of the operating and other items corresponding therewith:

Year Ended December 31:	*Investment in Road and Equipment	Net Railway Operating Income	Per Cent of Return
1924	\$58,776,547.47	\$3,518,079.92	5.99
1923	56,259,783.15	2,454,067.64	4.36
1922	54,911,418.04	2,245,066.96	4.09
1921	54,639,199.60	1,560,741.26	2.86
1920	53,663,884.23	1,838,466.71	3.43
Average	\$55,648,966.50	\$2,323,284.50	4.17

*Does not include Material and Supplies and Cash on hand.

Financial

The changes in funded debt shown by balance sheet of December 31, 1924, as compared with December 31, 1923, consisted in the payments of (a) \$573,173.38 on equipment trusts, and (b) \$7,500,000 face amount of Five-Year Six Per Cent. Secured Gold Notes (releasing \$9,600,000 face amount of Six Per Cent. General Mortgage Bonds, Series A, which had been pledged to secure these notes, and upon this release, \$7,500,000 face amount of these bonds were pledged to secure the new issue of \$6,000,000 Two-Year Notes, mentioned below, the remaining \$2,100,000 face amount of these bonds being placed in your Company's treasury); and in the addition of (a) \$631,228.10 equipment agreement dated May 15, 1920, (original amount \$757,151.51 less \$125,923.41 payments made prior to January 1, 1924), (b) \$6,000,000 face amount Two-Year Five Per Cent. Secured Gold Notes (secured by \$7,500,000 face amount

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of Six Per Cent. General Mortgage Bonds, Series A), (c) \$700,000 face amount Six-Year Six Per Cent. Collateral Note (secured by \$933,000 face amount of Six Per Cent. General Mortgage Bonds, Series A) to the Director General of Railroads, which represents the funding of the net balance of all accounts and claims arising out of Federal control, to which reference was made in the annual report for year 1923), and (d) \$1,740,000 face amount of equipment trust obligations to provide approximately 80% of the funds for the purchase of 1,000 automobile box cars of 40-ton capacity. There were also issued \$981,000 face amount of Six Per Cent. General Mortgage Bonds, Series A, maturing January 1, 1949, of which \$933,000 face amount were pledged as security for the \$700,000 Six-Year Six Per Cent. Collateral Note mentioned above, and the remaining \$48,000 face amount are held in your Company's treasury.

An analysis of the property accounts will be found on pages 14 and 15, by reference to which will be seen that additions and betterments were made during the year to the net amount of \$2,504,979.57, of which \$366,604.83 was added to cost of road, and \$2,138,374.74 was added to cost of equipment.

During the past sixteen years your Company's net addition to property accounts has been as follows:

Equipment	\$11,674,454.32
Additions and Betterments	9,103,712.42
	<u>\$20,778,166.74</u>

General Remarks

The equipment in service December 31, 1924, consisted of:

Locomotives owned	123	Decrease	11
Locomotives held under equipment trusts	30		
Total	153	Decrease	11

Passenger train cars owned

Freight train and miscellaneous cars owned	8,158	Decrease	1,268
Freight train cars leased under equipment trusts	3,500	Increase	638
Freight train cars under special trust	47		

Total freight train and miscellaneous cars

The changes during the year in accrued depreciation of equipment were as follows:

Balance to credit of account December 31, 1923	\$4,142,840.85
Amount credited by charges to operating expenses	\$722,526.55
Charges to account, for:	
Accrued depreciation on equipment retired during year—11 locomotives and 2,275 freight, passenger and work cars	\$564,619.37

Accrued depreciation on cars changed in class during year

Less: Adjustments of accrued depreciation on cars retired in previous years—Cr.	6.86
	<u>\$579,219.70</u>

Balance to credit of account December 31, 1924

Approximately .94 miles of yard tracks at Parsons were completed and placed in service.

New twin span turntable, 115 feet long, was installed at Parsons, replacing turntable 100 feet long.

New engine washing plant was erected and an additional ash conveyor installed at Parsons.

	1924	1923		
Operating Revenues were	\$17,443,398.75	\$17,563,402.40	Dec.	\$120,003.65
Net Opr. Revenues were	4,264,896.17	3,536,213.28	Inc.	728,682.89
Operating Ratio	75.6%	79.9%	Dec.	4.3%
Tons of Revenue Freight				
Carried One Mile	2,259,716,943	2,043,870,203	Inc.	215,846,740
Revenue Train Load—Tons	1,454	1,501	Dec.	47
Revenue Tons per Loaded Car	46.6	44.7	Inc.	1.9

The revenue coal and coke tonnage was 16,412,043 tons, an increase of 21.2%; other revenue freight tonnage was 3,889,525 tons, an increase of 0.1%. Total revenue tonnage was 20,301,568 tons, an increase of 16.5%. Freight revenue was \$15,021,470.34, a decrease of 0.9%. Freight train mileage was 1,553,881 miles, an increase of 14.1%. Revenue ton miles were 2,259,716,943, an increase of 10.6%. Ton mile revenue was 6.65 mills, a decrease of 10.4%. Revenue per train mile was \$9.667, a decrease of 13.2%. Revenue tonnage per train mile was 1,454 tons, a decrease of 3.1%; including Company's freight, the tonnage per train mile was 1,481 tons, a decrease of 3.5%. Tonnage per locomotive, including Company's freight, was 1,251 tons, a decrease of 2.9%. Revenue tonnage per loaded car was 46.6 tons, an increase of 4.3%. Tons of revenue freight carried one mile per mile of road were 6,482,821, an increase of 10.6%.

Coal mines located on your Company's lines shipped 1,322,039 tons of bituminous coal during the year, a decrease of 57.7%. Tonnage of coal and coke received from connecting lines was 15,090,004 tons, an increase of 44.8%. Tonnage of freight other

GENERAL BALANCE SHEET, DECEMBER 31, 1924

ASSETS		LIABILITIES	
Property Investment.		Capital Stock	
Cost of Road	\$35,216,379.95		\$11,000,000.00
Cost of Equipment	22,604,047.75	Funded Debt.	
	<u>\$57,820,427.70</u>	First Consolidated Mortgage 4½% Bonds	1999 \$16,022,000.00
Securities of Proprietary, Affiliated and Controlled Companies—Pledged.		First Mortgage C. & H. V. R. R. 4% Bonds	1948 1,401,000.00
Stocks	\$108,088.66	First Mortgage C. & T. R. R. 4% Bonds	1953 2,441,000.00
Bonds	300,000.00	Ten Year 6% Collateral Notes	1931-1932 1,665,000.00
	<u>408,088.66</u>	Six Year 6% Collateral Note	1930 700,000.00
Securities of Proprietary, Affiliated and Controlled Companies—Unpledged		Two Year 5% Secured Gold Notes	1926 6,000,000.00
Stocks	\$201.00		<u>\$28,229,000.00</u>
Bonds	196,451.80	Equipment Trust Obligations	
	<u>196,652.80</u>	(Includes \$595,054.72,—see Contra)	8,166,054.72
Securities—Issued—Pledged.			<u>36,395,054.72</u>
General Mortgage 6% Bonds, (see Contra) ..	10,653,000.00		<u>\$47,395,054.72</u>
	<u>\$69,078,169.16</u>	General Mortgage 6% Bonds, not in hands of public, (see Contra)	
Working Assets.			12,801,000.00
Cash	\$4,275,766.81	Working Liabilities.	
Demand Loans and Deposits	250,000.00	Traffic Balances	\$863,491.09
Time Drafts and Deposits	500,000.00	Audited Vouchers and Wages Unpaid	1,080,960.40
Special Deposits	424,526.44	Miscellaneous Accounts Payable	129,962.87
Loans and Bills Receivable	26,000.00	Matured Interest, Dividends and Rents Unpaid	413,370.00
Traffic Balances	729,466.01	Funded Debt Matured Unpaid	2,000.00
Agents and Conductors	39,236.24	Other Working Liabilities	19,310.35
Miscellaneous Accounts Receivable	406,115.29		<u>\$2,509,094.71</u>
Other Working Assets	23,135.70	Deferred Liabilities.	
	<u>\$6,674,246.49</u>	Unmatured Interest, Dividends and Rents Payable	\$272,765.83
Materials and Supplies	1,138,725.33	Taxes Accrued	771,206.14
Securities in Treasury—Unpledged.		Insurance and Casualty Reserves	78,850.55
Stocks	\$500.00	Operating Reserves	126,299.66
Bonds	2,747,000.00	Accrued Depreciation—Equipment	4,286,154.56
(Includes \$2,148,000.00 General Mortgage 6% Bonds,—see Contra)		Other Deferred Credit Items	460,838.41
	<u>2,474,500.00</u>		<u>\$5,996,115.15</u>
Deferred Assets.		Appropriated Surplus.	
Advances to Proprietary, Affiliated and Controlled Companies	\$58,929.06	Additions to Property through Income since June 30, 1907	\$288,966.66
Advances, Working Funds	7,456.06	Funded Debt Retired through Income and Surplus	138,756.90
Insurance paid in advance	963.82	Other Reserves	145,295.11
Cash in Sinking Funds	650.74	Appropriated surplus against contingent liability for freight claims	13,405.25
Special Deposit with Trustee—Mortgage Fund (Includes \$595,054.72 Equipment Obligations,—see Contra)	1,170,693.29		<u>\$586,423.92</u>
Cash and Securities in Insurance Reserve Fund	78,850.55		<u>12,336,894.78</u>
Other Deferred Debit Items	941,398.78		<u>\$12,923,318.70</u>
	<u>2,258,942.30</u>	Profit and Loss—Balance	
	<u>12,546,414.12</u>		<u>\$81,624,583.28</u>
Total	<u>\$81,624,583.28</u>	Total	<u>\$81,624,583.28</u>

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than coal and coke increased 0.1% over 1923. Average revenue per ton on coal originating on line decreased from \$1.34 in 1923 to \$1.08 in 1924, due to shorter haul, whereas the average revenue per ton on coal received from connecting lines was approximately 61 cents in both years. The decrease of 0.9% in freight revenue, notwithstanding the increase of 16.5% in revenue tonnage, was caused by the increased tonnage of coal from connecting lines carrying lower average revenue per ton and the decrease of 26 cents per ton on coal originating on line.

Transportation Expenses were \$5,344,105.37, an increase of \$124,851.83, or 2.4%, whereas Operating Revenues decreased 0.7% and revenue ton miles increased 10.6%. The ratio of Transportation Expenses to Operating Revenues was 30.6% in 1924 and 29.7% in 1923. The decrease in the total operating ratio from 79.9% in 1923 to 75.6% in 1924 was caused principally by decreased expenditures for Maintenance of Equipment from \$6,476,071.61 in 1923 to \$5,337,945.73 in 1924, a decrease of \$1,138,125.88, or 17.6%. The increase in Transportation Expenses of 2.4% was due to the increase of 16.5% in tonnage of freight handled and 10.6% in revenue ton miles. There was an increase in net credit for Equipment Rents of \$494,843.

There were 506,735 passengers carried, a decrease of 21.9%. The number of passengers carried one mile was 26,068,051, a decrease of 19.3%. Passenger revenue was \$898,983.63, a decrease of 19.3%. Revenue per passenger per mile was 3.449 cents. The number of passengers carried one mile per mile of road was 74,786, a decrease of 19.3%. Passenger train mileage was 626,410, a decrease of 1.3%. Passenger revenue per train mile was \$1.435, a decrease of 18.2%; including mail and express it was \$1.796, a decrease of 16.9%. Passenger service train revenue per train mile was \$1.852, a decrease of 16.8%. Reference was made in last

year's report to the decrease in the number of local passengers carried and in the revenue therefrom due to the establishment of motor bus lines and increased use of private motor cars. In 1924 there was a further decrease of 24% in the number of local passengers carried and 22.1% in the revenue therefrom due to the same causes. There was a decrease of 12.4% in the revenue from through passengers.

There were 142 tons of new 130-lb. rails, equal to .70 track miles, and 5,649 tons of new 100-lb. rails, equal to 36 miles, used in renewals of existing main tracks.

There were 270,263 cross ties and 44,113 yards of ballast used in maintaining existing tracks, an increase of 16,742 cross ties and an increase of 2,267 yards of ballast.

The average amount expended for repairs per locomotive was \$9,673.17, a decrease of 0.6%; per passenger train car \$1,757.86, an increase of 10.1%; per freight train car \$142.18, a decrease of 42.0%.

On November 19, 1924, agreement with the Interstate Commerce Commission was reached by which your Company received \$453,630.97 from the United States Government in full and final settlement covering the so-called Guaranty period March 1 to August 31, 1920. This amount is included in the General Income Account for the year 1924.

Appreciative acknowledgment is hereby made to officers and employees for their efficient service during the year.

By order of the Board of Directors:

W. J. HARAHAN,
President.

O. P. VAN SWERINGEN,
Chairman.

[ADVERTISEMENT]

(Continued from page 1239)

as \$4,432,500 and that of the property used, including leased lines, at \$23,327,346.

HOCKING VALLEY.—1924 Earnings. See excerpts from annual report appearing on adjacent pages.

KANSAS CITY, MEXICO & ORIENT RAILWAY.—Reorganization.—This company has applied to the Interstate Commerce Commission for authority to acquire control of the properties of the old Kansas City, Mexico & Orient Railroad in Kansas and Oklahoma and, by purchase of the stock, of the Kansas City, Mexico & Orient of Texas, in accordance with the plan of reorganization.

LONGVIEW, PORTLAND & NORTHERN.—Equipment Notes.—The Interstate Commerce Commission has authorized the issuance of \$66,666 promissory notes in connection with the purchase of 50 logging cars at an aggregate cost of \$88,886.

LORAIN, ASHLAND & SOUTHERN.—Abandonment of Line. The Interstate Commerce Commission has issued a certificate authorizing the Lorain, Ashland & Southern to abandon its line from Lorain to Ashland and thence to Custaloga, a total distance of approximately 66.5 miles, representing the entire mileage of the company. The company is owned jointly by the Pennsylvania and the Erie and is operated separately. All of the communities which it reaches are served by other carriers with the exception of three. The interest has been in default on the first mortgage bonds since October 1, 1914, and a suit is pending on the foreclosure of the mortgage but no receiver for the road has been appointed. The road is represented as being in poor physical condition due to deferred maintenance and the company has been financially unable to meet its current indebtedness.

LOUISVILLE & NASHVILLE.—Tentative Valuation.—The Interstate Commerce Commission's tentative valuation report as of June 30, 1917, shows a final value for rate-making purposes of \$304,895,070 for the property owned and \$321,169,838 for the property used. The outstanding capitalization as of valuation date was \$242,779,615, including \$72,000,000 of stock and \$170,422,825 of funded debt, and the investment in road and equipment, including land, was stated in the books as \$281,620,323. The report readjusts this to \$256,798,838, of which \$132,810,178, less an undetermined portion assignable to offsetting items recorded at \$17,378,824, is said to represent considerations other than money. The cost of reproduction new of the property owned is reported as \$323,683,547 and that of the property used as \$276,045,503, and the cost of reproduction less depreciation of the property owned is reported as \$262,590,186 and that of the property used as \$276,045,503. A total of 64,040

acres of carrier lands is given a present value of \$25,968,432. The company owned securities of other companies of a par value of \$36,378,999 and a book value of \$31,931,197. It also had cash on hand and materials and supplies amounting to \$26,854,271, of which \$5,606,000 is included in the final value, the rest being classed as non-carrier property.

MAINE CENTRAL.—Authorized to Acquire and Abandon Line.—The Interstate Commerce Commission has authorized the acquisition by the Maine Central of the capital stock of the Hereford Railway. The latter operates a line 53 miles in length from the Vermont-Dominion of Canada boundary north to Lime Ridge, Quebec. The company is leased to the Maine Central for 999 years from May 1, 1890. The Maine Central proposes to purchase all or the major part of the \$800,000 stock at a price not to exceed \$60 a share so as to enable it to modify or abrogate the lease. The territory served by the railway is represented to be served by other railroads. The line of the Hereford Railway curves across the international boundary and passes through a cut in Coos County, N. H., for a distance of 0.67 miles, the only portion in the United States, but there is no station at this point. Authority is granted for the abandonment of this portion of the line, the only portion over which the commission has abandonment jurisdiction. The abandonment is not to be effective until after six months, and joint rates are to be established on traffic at present handled by the Hereford Railway.

MINNEAPOLIS & ST. LOUIS.—Receiver's Certificates.—Interstate Commerce Commission has granted authority to issue \$750,000 of 6 per cent receiver's certificates to refund a like amount maturing April 30, May 5 and May 20, 1925.

MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE.—Equipment Trusts. The Interstate Commerce Commission has granted authority to this company to assume obligation and liability with respect to \$400,000 equipment trust certificates, Series L, to assist in the purchase of 250 75-ton all steel ore cars, total cost approximately \$574,875. The equipment trust agreement is dated May 1, 1925, and certificates mature semi-annually to May 1, 1935.

NEW YORK, CHICAGO & ST. LOUIS.—1924 Earnings. Annual report for 1924 shows net income after charges of \$5,869,247, equivalent after preferred dividends to \$14.26 a share on \$30,322,194 common stock in the hands of the public. Net earnings in 1923 were \$6,331,342, equivalent after preferred dividends to \$15.11 a share on \$30,191,204 common stock outstanding on December 31, 1923. See excerpts from annual report appearing on adjacent pages.

PERE MARQUETTE.—New Director. Frederick Osborn has been elected a director and member of the executive committee, succeeding Thomas F. Woodlock, recently appointed member of the Interstate Commerce Commission. Mr. Osborn was formerly president of the Detroit, Toledo & Ironton.

SOUTHERN PACIFIC.—Bonds Sold. Kuhn, Loeb & Co. have sold \$6,425,500 Southern Pacific Railroad Company first refunding mortgage 4 per cent bonds, due January 1, 1955, at a price of 91 and accrued interest yielding over 4.55 per cent to maturity.

The principal and interest of these bonds are guaranteed by endorsement by the Southern Pacific Company.

These bonds are to be issued under the First Refunding Mortgage of the Southern Pacific Railroad Company, dated January 3, 1905, and will be secured by a direct lien on 3,085 miles of railroad (on 736 miles of which they are a first lien) and upon the equipment, terminals, depots and other appurtenances, subject to \$13,485,500 prior lien bonds which may not be renewed or extended and for the retirement of which First Refunding Mortgage Bonds are reserved. The lines covered by this mortgage comprise all of the main lines of railroad owned by the Southern Pacific Railroad Company in the States of California, Arizona and New Mexico.

The purpose of the sale of these bonds is to reimburse the treasury of the Southern Pacific Company for its purchase of the bonds which were issued on account of additions to and betterments of the lines covered by the mortgage.

The total authorized amount of the First Refunding Mortgage Gold Bonds is limited to \$160,000,000, of which \$143,745,500 will be outstanding after the present issue; \$269,000 have been issued and subsequently retired by the sinking fund; \$13,485,500 are reserved to retire a like amount of prior lien bonds and the remaining \$2,500,000 are reserved for use in, or to aid in, the refunding or retiring of prior lien bonds (any balance not required for such purposes to be used for other lawful corporate purposes of the company).

Interstate Commerce Commission's authorization for the sale of these bonds was reported in the *Railway Age* of May 2.

ST. LOUIS SOUTHWESTERN.—Interlocking Directors Authorized.—The Interstate Commerce Commission has authorized J. E. Gorman, Charles Hayden, M. L. Bell and Nathan L. Amster to serve as directors of the St. Louis Southwestern, on condition that in event the commission shall deny the application of the Chicago, Rock Island & Pacific for authority to acquire control of the St. Louis Southwestern, the authority shall cease at the expiration of 30 days after the date of any order denying such application.

TERMINAL RAILROAD ASSOCIATION OF ST. LOUIS.—Acquisition.—This company has applied to the Interstate Commerce Commission for authority to acquire control by lease of the lines of its associated or affiliated companies, the St. Louis Merchants' Bridge Terminal, the East St. Louis Connecting and the St. Louis Transfer, so that they may be operated as one operating unit.

VIRGINIAN.—New Directors. George H. Church and George W. Davison have been elected directors, succeeding C. W. Huntington and William H. Truesdale.

WESTERN PACIFIC.—Stock Dividend Plan Approved.—Stockholders of the Western Pacific Railroad Corporation at a meeting on May 11 approved the plan to change the status of the preferred stock so that it may be cumulative to the extent of two years' dividends at all times. The plan also calls for a stock dividend of one share of preferred and one share of common on each six shares of common and preferred outstanding. Contingent upon the approval of the plan, the directors have declared a cash dividend of \$5 on the common stock and of \$1.558 on the preferred.

Bonds Sold.—The \$4,000,000 of first mortgage, 5 per cent bonds, due March, 1946, offered by the Western Pacific Railroad Company have been purchased by the Western Pacific Railroad Corporation, the holding company.

Dividends Declared

Canadian Pacific—Common, 2½ per cent, quarterly, payable June 30 to holders of record June 1.

Cripple Creek Central—Preferred, 1 per cent, payable June 1 to holders of record May 15.

Illinois Central Leased Lines.—\$2.00, semi-annually, payable June 15 to holders of record June 1.

Pittsburgh, Bessemer & Lake Erie.—Preferred, 3 per cent, semi-annually, payable June 1 to holders of record May 15.

Trend of Railway Stock and Bond Prices

	May 12	Last Week	Last Year
Average price of 20 representative railway stocks	79.83	79.91	63.58
Average price of 20 representative railway bonds	91.26	91.00	85.33

Railway Officers

Executive

Adrian H. Larkin of New York has been elected chairman of the board of the Virginian Railway, and **W. R. Coe** and **H. H. Rogers** have been elected vice-presidents.

Operating

L. B. Barry has been appointed superintendent of the Ft. Smith & Western, with headquarters at Ft. Smith, Ark., succeeding **W. E. Welch**, who has resigned to engage in other business.

T. H. Kearton, supervisor of telegraph and signals of the Chicago Great Western, with headquarters at Mason City, Ia., has been promoted to general signal inspector, with headquarters at Chicago, succeeding **W. J. Mullins**, deceased.

Eber B. Kessler has been appointed superintendent of the Long Island, succeeding **Ralph Peters, Jr.**, who has resigned to become assistant vice-president of the Corn Exchange Bank,

New York. Mr. Kessler was born at Jersey Shore, Pa., on July 6, 1872, and entered railway service in February, 1890, as a trainman on the Philadelphia & Erie division of the Pennsylvania. Two years later he was promoted to conductor on the Pennsylvania, Lines West, at Pittsburgh. In 1905 he became night yardmaster at Colliers, Pa., and he subsequently served as yaardmaster at Scullys, Pa. In April, 1907, he went to New York as general yardmaster of the Long Island, in charge of yards in the greater New York



Eber B. Kessler

territory, and three years later was promoted to assistant freight trainmaster. In 1917 he became freight trainmaster. During Mr. Peters' absence with the American army in France, he served as acting assistant superintendent, and became assistant superintendent in 1923, which position he held until the time of his recent promotion. Mr. Peters was born on May 5, 1887, at Cincinnati, Ohio, and was graduated from Princeton University in 1908. Immediately after his graduation he entered service on the Long Island and served in various capacities until 1917, when he became assistant trainmaster, and a few months later assistant superintendent. He was absent for a year with the transportation corps of the American Expeditionary Forces. At the end of federal control he became superintendent of passenger transportation and, in 1922, was appointed assistant superintendent. He became superintendent in July, 1923.

I. A. MacPherson, division superintendent on the Western lines of the Canadian National, with headquarters at Prince Rupert, B. C., has been transferred to the Saskatchewan district, with headquarters at Saskatoon, Sask., succeeding **J. P. Johnson**, transferred.

G. D. Hughey, who has been appointed superintendent of the Champlain division of the Delaware & Hudson, was born on December 7, 1884, at Oakmont, Pa. He was educated at the Pittsburgh High School and Rensselaer Polytechnic Institute, Troy, N. Y., and entered railway service in 1910, in the

engineering department of the Bessemer & Lake Erie, at Greenville, Pa. In 1913 he became inspector in the engineering department of the Delaware & Hudson, and from this time until August, 1917, he held various positions in the engineering department. From August, 1917, to November, 1921, he was division engineer of the Champlain division, and from November, 1921, to May 1, 1925, he was division engineer of the Susquehanna division of the same road, which latter position he held at the time of his recent appointment.

Traffic

J. A. Brown, whose promotion to freight traffic manager of the Gulf Coast Lines, with headquarters at Houston, Texas, was reported in the *Railway Age* of May 2, entered railway service in 1895 in the treasurer's office of the Missouri-Kansas-Texas. He was employed in the traffic department of the International-Great Northern in 1896 where he remained until 1907 when he was appointed chief clerk in the traffic department of the Gulf Coast Lines at Beaumont, Texas. Mr. Brown was appointed assistant general freight agent of the Trinity & Brazos Valley in 1910 but returned to the Gulf Coast Line two years later as general freight agent. He continued in that position until his recent promotion to freight traffic manager.

Engineering, Maintenance of Way and Signaling

M. Donahoe, general roadmaster of the Chicago & Alton, with headquarters at Bloomington, Ill., has been promoted to general supervisor of maintenance, in charge of the maintenance of roadway, bridges and buildings and signals, with headquarters at Chicago, a newly created position. Mr. Donahoe entered the service of the Alton in 1888 and was promoted to foreman at Alton, Ill., in 1891. He was promoted to assistant roadmaster in July, 1899, and was promoted to supervisor of track in 1900. Mr. Donahoe was promoted to division roadmaster in 1910 and was promoted to general roadmaster in 1915. He continued in that position until his recent promotion to general supervisor of maintenance.

B. H. Prater, whose promotion to assistant chief engineer of the Oregon Short Line, with headquarters at Salt Lake City, Utah, was reported in the *Railway Age* of April 18, was born on November 11, 1881, at Bingham, Ill., and graduated at the University of Illinois as a civil engineer in 1903. During 1903 and 1904 he was engaged in work as an instructor in the surveying and masonry laboratory and assistant in bridge design at the University of Illinois. He was first employed in railway service as a track apprentice on the Illinois Central during the summer vacation while attending the university, during which period he also served as a shop apprentice in the Illinois Steel Company and as a clerk in the American Bridge Company. Mr. Prater was employed as a transitman on the Panama canal during 1904 and 1906. He entered the service of the Oregon Short Line in the latter year as a draftsman and was subsequently promoted to chief draftsman, office engineer, and engineer of buildings. In 1918 he left railway service to become manager of the supply division of the Chester Shipbuilding Company, Chester, Pa., but on May 12, 1919, he returned to the Oregon Short Line as engineer maintenance of way, with headquarters at Pocatello, Idaho. Mr. Prater held that position until his recent promotion to assistant chief engineer.



B. H. Prater

Frederick Mears, chief engineer of the St. Paul Union Depot Company, has been appointed assistant chief engineer of the Great Northern, with headquarters at Seattle, Wash., succeeding **O. S. Bowen** who has been appointed assistant to the chief engineer, with headquarters at St. Paul, Minn., a newly created position. **H. F. Hamilton**, district engineer of the Eastern district of the Great Northern, with headquarters at St. Paul, Minn., has been promoted to assistant to the chief engineer, with the same headquarters, also a newly created position. **H. J. Seyton**, district engineer of the Lake district, with headquarters at Duluth, Minn., has been given jurisdiction over the Eastern district also, succeeding Mr. Hamilton.

Purchasing and Stores

F. C. Warren, general storekeeper of the St. Louis Southwestern, with headquarters at Tyler, Texas, has been transferred to Pine Bluff, Ark., succeeding **E. R. Bernhardt**, resigned. **G. F. Battenfield** has been appointed general storekeeper at Tyler, succeeding Mr. Warren.

Obituary

William F. Evans, general solicitor of the St. Louis-San Francisco, with headquarters at St. Louis, Mo., died in that city on May 9 after several months' illness. Mr. Evans was born on November 17, 1859, in Monroe county, Iowa, and entered railway service in September, 1866, in the legal department of the Chicago, Rock Island & Pacific. He was promoted to general attorney in 1902 and in 1907 was promoted to general solicitor. Beginning in 1907, Mr. Evans served also as attorney for the St. Louis-San Francisco and was promoted to general solicitor in December, 1909, retaining his position as general attorney for the Rock Island in Missouri. He continued in that capacity until his death.

August Kreusi, former engineer of construction of the General Electric Company, died at El Paso, Texas, on May 7. He had been on leave of absence since 1921, and resigned two years ago because of ill health. Mr. Kreusi was graduated from Union College in 1898, and from that time until 1900 was with the British Thomson-Houston Company in London. During the next two years he worked on electrical machine design for the General Electric Company at Schenectady. From 1902 to 1906 he was engaged in the commercial development of the Curtis steam turbine, and from then until 1908 was in the railway engineering department, working on power house and sub-station design. Mr. Kreusi was made head of the construction engineering department when it was established in 1908, and continued in that position until he obtained a leave of absence in 1921. When he resigned in 1923, he continued his work with the company in a consulting capacity. Mr. Kreusi was a son of John Kreusi, who was manager of what is now the Schenectady works of the General Electric Company.

E. H. Bowser, superintendent of ties and treatment of the Illinois Central, with headquarters at Memphis, Tenn., was drowned in the Mississippi river on May 8 with 21 other persons when a government steamer, upon which a party of engineers attending the Mid-South Engineering Association convention at Memphis were making an excursion, capsized. The accident occurred on the return trip from an inspection of government engineering work on Cow Island. Mr. Bowser was born on January 13, 1856, at Louisville, Ky., and attended Vanderbilt University from 1878 to 1883. He entered railway service in October of the latter year on the Cincinnati Southern, now a part of the Southern railway system, where he remained until 1896, when he entered the service of the Illinois Central. In July, 1899, he was appointed assistant engineer on the Louisville & Nashville where he was subsequently promoted to special engineer, roadmaster, and superintendent in charge of creosoting work. Mr. Bowser returned to the Illinois Central in January, 1906, as superintendent of the timber department, with headquarters at Memphis, Tenn., his title later being changed to that of superintendent of ties and treatment.